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THE ECONOMIC JOURNAL

JUNE 1954

IMPERIAL PREFERENCE: A QUANTITATIVE ANALYSIS[1]

INTRODUCTION

The Need for Quantitative Analysis

MUCH has been written, and perhaps even more spoken aloud, on the subject of Imperial Preference. But the discussion has been to a large extent theoretical and political rather than quantitative. There have, it is true, been analyses of the changing pattern of Commonwealth trade after Ottawa. But the figures are not easy to interpret, since the changes recorded are by no means wholly the result of Imperial Preference. There has been little attempt to analyse in a systematic way the proportion of trade enjoying preference and the size of the preferential margins. Information on such matters would seem to be essential in any attempt to assess the changing importance of Imperial Preference in Commonwealth trade over the past twenty-five years, and the main object of the present study is to provide some of the relevant orders of magnitude. Some of the more detailed results obtained are also given in the hope that they may be of value in the study of particular problems, but these are in general subject to a wider margin of error. No attempt has been made here to relate the results obtained to changes in Commonwealth trade; that would require much further research.

The Choice of Years

The statistical work involved in a study of this sort is very considerable; detailed analyses have to be made of the trade returns and tariff lists of a large number of countries. Only a few years could therefore be studied, and those selected were: 1929, to represent the position before Ottawa; 1937, as a typical

[1] We are indebted to the Oxford University Institute of Statistics for technical assistance and to government officials and others in many countries for valuable help and advice.

year after Ottawa but before the process of extending preferences went into reverse; 1948, as a post-war year.

1937 was chosen partly because work had already been done on this year in connection with an earlier article,[1] but it is probably as good a year as could be found for the purpose. The Ottawa Agreements of 1932 involved the overhaul of Dominion tariffs, and this was a lengthy task; nor was the extension of preference by the Colonies completed for several years after Ottawa. It would thus have been unwise to select a year before, say, 1936; and the U.S./U.K. Trade Agreement of 1938 is sometimes regarded as an important landmark in the " retreat " from Imperial Preference.

1929 was the latest pre-Ottawa year which it was thought fit to compare with the relatively prosperous 1937; 1930 and 1931 were years of depression.

1948 was the latest post-war year for which reasonably complete information was available when the calculations were made. But it is a useful year to take. By then a large part of the reduction in Imperial Preference that has occurred since 1937 had taken place. The tariff lists we have used in calculating the figures for 1948 incorporate most of the reduced preferences resulting from the negotiations at Geneva under G.A.T.T. in 1947; subsequent reductions have been less important. And by 1948 a large part of the rise in prices that has greatly reduced the *ad valorem* incidence of specific preferences since 1937 had already taken place. In a later section some broad indications are given of what is likely to be the present position (1953).

Scope and Definitions

The study covers U.K. exports to and imports from the Commonwealth, but not trade between Commonwealth countries other than the U.K.[2] The " Commonwealth " is defined to cover all countries classified as " British " in the U.K. trade returns for the three years, but to include Burma in 1948 as preference continued to be given; under this definition Eire is included throughout.

The analysis of U.K. exports does not include our trade with some of the least important Colonies, but covers countries that took some 95% of our total exports to the Commonwealth.

[1] ECONOMIC JOURNAL, September 1952.

[2] Trade of the latter type comprised about one-sixth of total intra-Commonwealth trade in 1929, one-fifth in 1937 and one-quarter in 1948.

Only tariff preferences are considered, and no account is taken of the preferential effects of other trade and financial measures.

For Commonwealth imports from the U.K., the margin of preference *on any item* is defined as the difference between the percentage duty paid on it when imported from the U.K. and the percentage it would have paid had it come from the U.S., specific duties being reduced to their *ad valorem* equivalents. The margin is reckoned as a percentage of the import value excluding duty; had it been based on the value including duty, which is more relevant when assessing competitive power, the figures would have been lower. The comparison was made with the U.S., since the practice in some Dominions of charging different rates of duty on goods from different foreign countries made some such clear-cut definition necessary; and the U.S., as our largest competitor in the world market for manufactures to-day, seemed the most interesting country to choose. Where statistical difficulties necessitated departure from the strict definition this has been mentioned in the notes to the tables concerned.

The margin of preference *on a country's total imports from the U.K.* is the average of the margins on all the items weighted by the value of imports of each from the U.K. The average margin of preference *on the U.K.'s exports to the Commonwealth as a whole* is likewise the average of the margins granted by the various countries weighted by the value of U.K. exports to each.

The method of calculation used may, incidentally, tend to overstate the average margins of preference, since the existence of preference tends to increase the proportion of U.K. exports enjoying higher preferences and to reduce the proportion enjoying lower preferences or none at all.[1]

For each country the average margin of preference is in fact the difference between the total duty paid on imports from Britain and the total duty that would have been paid had the goods been American, expressed as a percentage of the total value of imports from Britain. This is, of course, not at all the same as the difference between the average rates of duty actually paid on imports from the U.K. and from the U.S. in any year. For example, between 1900 and 1932, although Canada granted preference to Britain, the average rate of duty paid on Canadian imports from the U.S. was consistently below that paid on imports from the U.K.; Canada took large imports of heavily taxed alcoholic beverages from the U.K. and large imports of raw

[1] See ECONOMIC JOURNAL, September 1952, p. 519.

materials and semi-manufactures from the U.S., which paid low duties or none at all.

For U.K. imports from the Commonwealth the margins of preference are defined in a similar way.

The Tables

Table I shows, for each year, for each country and for all countries taken together: (*a*) the proportion of imports from the U.K. enjoying preference; (*b*) the average margin of preference on such "preferred goods"; and (*c*) the average margin on all imports from the U.K., including those enjoying no preference. (Outside limits are sometimes given instead of precise figures; this is usually where it has been impossible to reconcile the tariff lists with the trade returns for particular items.) Table II gives a fuller picture of the amounts of trade passing at different rates, and the chart a summary for U.K. exports to the Commonwealth as a whole. The main results in these tables are brought together in Summary Table A, which also gives similar figures for U.K. imports from the Commonwealth not included in Table I.

Summary Table B attempts to show how far the changes that occurred between 1929 and 1937 and between 1937 and 1948 in the proportion of trade enjoying preference and in the average rates of preference were the result of: (*a*) changes in the pattern of trade, both commodity-wise and country-wise; (*b*) changes in prices [1] which altered the *ad valorem* incidence of specific duties; and (*c*) changes by governments in tariff rates. To save space, no table is given of the figures for each country obtained in the course of this calculation; but some interesting cases where changes in the pattern of trade or in prices were important are mentioned in the footnotes to Table I.

Finally, Table III and Summary Table C give some details which help us to discover how far the intensification of Imperial Preference between 1929 and 1937 was brought about by reducing tariff rates on trade between Commonwealth countries and how far by increasing rates on foreign goods. Some similar figures are given for 1937–48.

The order of countries in the tables corresponds to the value of U.K. exports to them in 1937.

The rest of the article describes the main findings.

[1] Strictly speaking, "average values"; but, for the sake of brevity, we refer to changes in "prices" throughout this paper.

The Results

The Position in 1929

(a) *Preferences Accorded U.K. Goods in British Countries in* 1929

In 1929 preferences enjoyed by U.K. exports were already fairly widespread. Canada had introduced preference in 1898, New Zealand and South Africa in 1903, Australia in 1908 and India in 1927, while U.K. exports to the Irish Free State enjoyed

Summary Table A

Proportion of Trade Enjoying Preference and Margins of Preference

	U.K. exports to Commonwealth.			U.K. imports from Commonwealth.		
	1929.	1937.	1948.	1929.	1937.	1948.
Percentage enjoying preference	35–36	55–57	49–51	7	60–61	54–56
Of which enjoying preferential margins of:						
10% or less . .	9	18	19	2	27	39
Over 10%, not over 20%	24	18	22	1	24	12
Over 20% . . .	3	20	9	4	9	4
Average percentage margin of preference:						
On goods enjoying preference	13	19–20	14–15	29–49	17–20	11–13
On all goods . . .	5	10–11	7	2–3	10–12	6–7

Notes: 1. See Tables I and II for further details and explanations.

2. To obtain the figures showing percentage of trade enjoying various rates of preference, the more detailed information contained in Table II has been adjusted:

(*a*) to allow so far as possible for extra information contained in footnotes to Table II;

(*b*) to be consistent with figures in first line of above table, which are based on fuller information.

3. The figures for U.K. imports cover 98% of imports from the Commonwealth in 1929 and 1937, and 100% in 1948, except the figures showing percentage of trade enjoying various rates of preference, which are based on less complete information (see Table II).

preferences from the inception of a separate Customs administration in the latter part of 1923. By 1929 Britain was thus receiving preferences in all the most important trading countries of the Commonwealth. They applied to over 80% of our trade to Australia and New Zealand, over 60% of our trade to Canada, but under 30% of our exports to South Africa and less than 10% of our exports to India and Eire. Among the smaller countries, we had preferences covering a substantial part of our exports to the West Indies and British Guiana and to the Rhodesias, but, partly

as a result of treaty obligations, partly for other reasons, few preferences of much importance in the rest of Africa or elsewhere.[1]

All told, rather more than one-third of U.K. exports to British countries enjoyed preferences. The great bulk of these were of

SUMMARY TABLE B

Analysis of Changes Shown in Summary Table A

	U.K. exports to Commonwealth.			U.K. imports from Commonwealth.		
	Percentage enjoying preference.	Average percentage margin of preference.		Percentage enjoying preference.	Average percentage margin of preference.	
		On goods enjoying preference.	On all goods.		On goods enjoying preference.	On all goods.
1. 1929 actual	35–36	13	5	7	29–49 [1]	2–3
2. 1937 if there had been no change in individual *percentage* margins of preference since 1929	39–41	12–14	5	7	38–66 [1]	3–4
3. 1937 if there had been no change in *tariff rates* since 1929	39–41	12–14	5	7	47–80 [1]	3–5
4. 1937 actual	55–57	19–20	10–11	60–61	17–20	10–12
5. 1948 if there had been no change in individual *percentage* margins of preference since 1937	52–55	21–23	11–12	63–65	21–27	14–18
6. 1948 if there had been no change in *tariff rates* since 1937	52–55	17–18	9–10	63–65	14–17	9–11
7. 1948 actual	49–51	14–15	7	54–56	11–13	6–7

[1] These figures have no great significance as so few goods are involved.

GENERAL NOTES TO SUMMARY TABLE B

Change from 1 to 2 and from 4 to 5 reflects change in trade pattern (commodity-wise and country-wise).
Change from 2 to 3 and from 5 to 6 reflects change in prices (which affect *ad valorem* incidence of specific duties).
Change from 3 to 4 and from 6 to 7 reflects change in tariff rates.
Lines 1, 4 and 7. As in Summary Table A.
Line 2. Figures obtained by weighting 1929 *percentage* margins of preference on each item by value of trade in each item in 1937.
Similarly *Line 5.*
Line 3. Figures obtained by applying 1929 *tariff rates* to the 1937 trade. This would give the same result as in line 2 if all duties were *ad valorem.* But in fact the percentage margins of preference are now different for all items subject to specific duties where prices have changed between 1929 and 1937.
Similarly *Line 6.*
This particular method of separating the effects of changes in trade patterns, prices and tariff rates was chosen largely for its statistical convenience. Other, equally plausible, methods might give different results. In particular, it will be noted that the method used in Summary Table C and in Table III differs from that used in Summary Table B, and does not always refer to the same categories of goods.

not more than 20%—under 3% of our trade to the Commonwealth did better than this—and the average preferential margin on goods enjoying preference worked out at 13%. As, however, this applied to little more than one-third of the total trade, the average margin of preference received by all our exports to the Commonwealth was only 5%.

[1] The only other countries covered by our calculations that granted preferences in 1929 were Gibraltar (on drink and tobacco) and the Channel Islands, but preferences were also granted by a number of smaller trading countries such as North Borneo, Fiji, Mauritius and Somaliland.

Summary Table C

Changes in Tariff Levels

A. U.K. Exports to Commonwealth

1. 1929–37

Goods first granted a preference between 1929 *and* 1937	%
Total value of exports of such goods in 1937	100
Of which goods subjected to:	
(i) Reduction in U.K. rate; no change in U.S. rate	5 [1]
(ii) Reduction in U.K. rate; increase in U.S. rate	5 [1]
(iii) No change in U.K. rate; increase in U.S. rate	30 [1]
(iv) Increase in U.K. rate; increase in U.S. rate	60 [1]

Goods already enjoying preference in 1929 (1929 *pattern of trade*)	Average percentage rate of duty. Goods from the U.K. (U.K. rate).	Had goods been from the U.S. (U.S. rate).
(*a*) 1929 tariff rates, 1929 prices	13–16	25–30
(*b*) 1937 tariff rates, 1929 prices	14–16	33–36
(*c*) 1937 tariff rates, 1937 prices	17–19	37–41

2. 1937–48

Goods still enjoying preference in 1948 (1948 *pattern of trade*)		
(*a*) 1937 tariff rates, 1937 prices	17–20	38–43
(*b*) 1948 tariff rates, 1937 prices	24–26	42–47
(*c*) 1948 tariff rates, 1948 prices	14	27–29

B. U.K. Imports from Commonwealth

1937–48

Goods still enjoying preference in 1948 (1948 *pattern of trade*)		Average percentage rate of duty. Goods from Commonwealth.	Had goods been from the U.S.
Including excise duties	(*a*) 1937 tariff rates, 1937 prices	45–58	63–81
	(*b*) 1948 tariff rates, 1937 prices	206–216	226–239
	(*c*) 1948 tariff rates, 1948 prices	75–79	86–92
Excluding excise duties	(*a*) 1937 tariff rates, 1937 prices	6–10	24–33
	(*b*) 1948 tariff rates, 1937 prices	7–11	27–34
	(*c*) 1948 tariff rates, 1948 prices	2–4	13–16

[1] Based on five countries only, but includes 85%, by value, of goods concerned; round figures.

General Notes to Summary Table C

1. No analysis is given of:

(i) U.K. imports first granted a preference between 1929 and 1937. Such preferences were granted largely by imposing duties on non-Commonwealth goods.

(ii) U.K. imports already enjoying a preference in 1929, U.K. imports and U.K. exports that lost preference between 1937 and 1948. Such goods were relatively unimportant.

2. Changes from (*a*) to (*b*) reflect changes in tariff rates.

Changes from (*b*) to (*c*) reflect changes in prices.

3. In calculating lines (*a*), (*b*) and (*c*), the 1929 or 1948 values of imports have been used throughout. The reference in some of the lines to 1937 prices means only that these have been used in calculating the *ad valorem* incidence of specific duties.

4. Only the figures in lines A1(*a*), A2(*c*) and B(*c*) (both) are comparable with any of the figures in Summary Table B.

TABLE I

Proportion of Trade Enjoying Preference

	A. Percentage of total U.K. exports to British [1] countries.			B. Percentage of total imports from the U.K. covered in calculation.		
	1929.	1937.	1948.	1929.	1937.	1948.
Union of South Africa	10·0	16·5	14·2	100·0	98·8	100·0
Australia [4]	16·7	14·9	17·1	99·2	92·8	99·0
India	22·2	14·2	13·4 [17]	99·4	99·1	100·0
Canada	10·8	10·9	8·3	100·0	99·7	99·6
Eire	11·1	8·6	8·9	99·7	99·3	98·8
New Zealand	6·6	8·0	6·2	99·3	100·0	79·1 [23]
Straits Settlements [28]	3·8	3·4	2·4 [16]	100·0	100·0	100·0 [16]
Channel Islands [5]	1·1	2·2	1·8	100·0	61·0	80·5
Ceylon	1·8	1·6	1·5	100·0	97·2	97·1
Hong Kong [28]	1·9	1·3	2·4	100·0	100·0	100·0
Burma [29]	1·9	1·3	1·7	—	98·6	95·0
Southern Rhodesia	0·6	1·2	1·8	99·8	99·5	99·6
Federated Malay States	1·0	1·2	1·9 [12]	100·0	97·9	99·9 [12]
Trinidad and Tobago	0·5	1·0	1·0	98·6	99·4	—
Jamaica	0·5	0·8	0·8	99·7	99·9	—
Malta	0·4	0·5	0·8	100·0	100·0	100·0
British Guiana	0·3	0·5	0·4	97·9	99·8	—
Gibraltar [26]	0·2	0·4	0·4	100·0	100·0	—
Northern Rhodesia	0·1	0·4	0·4	99·9	99·8	97·1
Territories granting no preference in 1948 [20]	6·1	8·2	10·4	100·0	100·0	100·0
Total of above	97·6	97·1	95·8			
Weighted average						

[1] Includes Burma after it left the Commonwealth, as preference continued to be granted. Otherwise "British" is defined as in the U.K. Trade Returns.

[2] Includes results of Geneva tariff negotiations under G.A.T.T. in 1947 (cf. footnote 11 and footnote 2 to p. 252).

[3] Allows for surtax on U.S. goods of $\frac{9}{10}$ or $\frac{1}{20}$ of duty. Also allows for provisions relating to exchange depreciation. About half of the fall in the percentage margins of preference between 1937 and 1948 is due to changes in the pattern of trade.

[4] In 1929 and 1937 margins are expressed as a percentage of the f.o.b. value of imports in terms of Australian currency in order to achieve comparability with 1948. This involved reducing 1937 margins of preference and tariff rates as shown in the tariff list in the ratio of 125 : 110 and increasing 1929 margins and rates in the ratio 100 : 110. In 1937 and 1948 allowance was made for primage duty and also for the Exchange Adjustment Act in 1937.

[5] Preference granted by charging same duties as the U.K. on U.S. goods and admitting U.K. goods free of duty.

[6] High because spirits and tobacco formed so large a proportion of dutiable imports.

[7] Allows for surtax of 30% of duty on most goods from the U.K. and the U.S.

[8] Allows for discount of 10% of duties of over 15% on U.K. goods. The change in the pattern of trade between 1937 and 1948 tended to increase the average margin of preference on all imports from the U.K., and the true fall was thus larger, say 24% to 10–11%. Of this fall nearly one-half was due to price changes. See also footnote 2 to page 252.

[9] Allows for discount of 10% of duties of over 15% on U.K. goods and for

and Average Margins of Preference

C. Percentage of imports from the U.K. enjoying preference.[22]			D. Percentage average margin of preference on goods enjoying preference.			E. Percentage average margin of preference on all imports from the U.K.		
1929.	1937.	1948.[2]	1929.	1937.	1948.[2]	1929.	1937.	1948.[2]
28–29	40–43 [25]	32–34 [25]	5	7	4–5	1	3 [19]	1–2
90–93	88–91	88–91	14–16	22	15–16	13–14	19–20	13–14
6–8	50	24–25 [18]	7–8	12	11–12 [18]	0–1	6	3 [18]
62–63 [8]	88 [9]	85–87 [8]	11 [8]	23 [9]	12–13 [8]	7 [8]	20 [9]	10–11 [8]
8	10–12 [13]	29–31 [14]	9–10	13–31 [13]	16–17 [14]	1	1–2 [15]	5 [14]
83–86	88–90	90–91	18–19	26 [3]	18 [3]	16	23–25 [3]	16–17 [3]
0	24	23 [16]	—	13	16 [16]	0	3	4 [16]
8	74–87	86–93	92–99 [6]	34–44	33–38	7	26–39	29–35
0	70–86	65–68 [11]	—	9–10	8–9 [11]	0	7–8	5–6 [11]
0	5	7	—	15	16–24	0	1	1–2
— [29]	62–92	61	— [29]	14	17	— [29]	9–13	11
93–94	96	97 [27]	6–7	19–20	15 [27]	6	19	14–15 [27]
0	44–58	36 [12]	—	14–15	13–14 [12]	0	6–8	5 [12]
90	64 [24]		11–16	19 [10]		10–14	12 [10]	
84	83		9	15		7	12–13	
0	70	76	—	12	13	0	8	10
90	93		17	18 [7]		15	17 [7]	
5	5–7		13	34–39		1	2	
42	93–97	98 [27]	10–11	9–10	10 [27]	4	9–10	10 [27]
0	0	0	—	—	—	0	0	0
35–36	55–57	49–51 [21]	13	19–20	14–15 [21]	5	10–11	7 [21]

excise duty of 3% on U.S. goods. Of the large rise between 1929 and 1937 in the percentage of imports from the U.K. given preference, 6 points are due to the change in the pattern of trade.

[10] Allows for surtax of 15% of duty on certain goods from the U.K. and the U.S.

[11] Does not include results of Geneva tariff negotiations in 1947.

[12] Malayan Union.

[13] Takes no account of additional 10% duty on certain U.K. goods.

[14] 1948 rates weighted by 1947 values (latest available when calculations made).

[15] Allows for additional 10% duty on certain U.K. goods.

[16] Singapore only.

[17] Includes Pakistan.

[18] 1948 rates weighted by 1947–48 values (latest available when calculations made). Includes Pakistan up to August 14, 1947, only. Weighted average thus assumes that Pakistan granted preference to same proportion of U.K. imports and granted same average margin of preference in the period August 15, 1947–March 31, 1948, as India. Of the fall in the percentage of imports from the U.K. given preference between 1937 and 1948, 10 points are due to the change in the pattern of trade.

[19] *Official Year Book* figure is 3·8, compared with 3·4 obtained by this calculation.

[20] Nigeria (including British Cameroons), Gold Coast (including Togoland), Kenya, Uganda, Tanganyika, Zanzibar, Nyasaland, Anglo-Egyptian Sudan, Palestine, Aden, New Guinea and Papua.

Notes continued on page 243.

General Notes to Table I

In calculating the margins of preference it was sometimes necessary to give upper and lower limits for a small percentage of items for which it was impossible to reconcile the classifications in the trade returns with those in the tariff lists. This kind of difficulty accounts for the outside limits in columns C, D and E, which take the place of precise figures. It also, together with rounding, accounts for the apparent slight inconsistencies between columns C, D and E and for the fact that the figures in column B are sometimes less than 100%.

Calculations for Australia and South Africa to replace the figures taken from *Official Year Books*, and slight revisions elsewhere account for the discrepancies between the figures for 1937 given here and those in the table published in the Economic Journal for September 1952 (G. D. A. MacDougall, "British and American Exports: A Study Suggested by the Theory of Comparative Costs." Part II, Appendix E.).

Column A: Calculated from *Annual Statement of Trade of the U.K.*

Columns B–D: Financial years beginning July 1 for Australia and April 1 for India and for Canada 1929–30 and 1937–38. Calendar years for Canada 1948 and for all other countries.

Weighting: The margin of preference on each country's total imports from the U.K. is the mean of the margins of preference on each item weighted as follows:

(*a*) New Zealand, Australia, Northern and Southern Rhodesia, South Africa and Malta for all years; British Guiana, Eire and Hong Kong for 1937; Eire and Ceylon for 1948: value of imports originating in the U.K.

(*b*) Channel Islands, Federated Malay States, Gibraltar and Straits Settlements for all years; Burma and Ceylon for 1937; Hong Kong and Burma for 1948: U.K. exports of "U.K. produce and manufactures."

(*c*) India for all years; Eire for 1929; Canada for 1948: value of imports consigned from the U.K.

(*d*) Canada, Jamaica, Trinidad and Tobago for 1929 and 1937; British Guiana for 1929: margins of preference on each item were weighted by the value of imports from the U.K. actually admitted at preferential rates and then to obtain the average margin of preference on all imports from the U.K. the total of the margins so weighted was expressed as a percentage of the total value of imports consigned from the U.K. (for Canada, British Guiana and Trinidad 1929 and Canada 1937) or of the total value of imports originating in the U.K. (for the others). For these countries therefore some of the figures in columns C and E have a slight downward bias relatively to the others, since the weight given to items having no preference includes goods which did not qualify for preferential treatment because an insufficient percentage of their value was the result of British labour. This is not sufficient to affect the general picture.

To obtain average figures for all British countries covered, the figures for each country were weighted according to the value of exports of U.K. produce and manufactures to it (column A), except column D, which was weighted according to the value of exports of U.K. produce granted preference by each country.

The comparability of margins of preference for different countries is slightly reduced by differences in methods of valuing imports (c.i.f., f.o.b., etc.); but this does not affect the general picture.

Trinidad, Jamaica, British Guiana, Gibraltar: No calculations made for 1948; no sufficiently recent trade returns available when work was done.

Even where U.K. goods enjoyed a preference, they often had to pay substantial duties, the average rate on such goods being 13–16%; had the goods been American they would have paid, on average, 25–30%. Many of these duties were, of course, imposed primarily to raise revenue rather than to protect domestic producers.

(b) *Preferences Accorded by the U.K. on imports from British Countries in* 1929

Preferences were introduced into the McKenna duties in 1919 and into the Key Industry duties in 1921, but with few exceptions the goods concerned were not important in Commonwealth trade. In 1929 preferences were granted on only 7% of U.K. imports from British countries, among the most important being those on sugar, cocoa, coffee, preserved fruits, spirits, wines, tobacco and road vehicles.

Many of the preferences granted were high, and averaged between about 30% and 50% (owing to statistical difficulties the margin of error is here unusually great), but as so few goods were involved, the average margin of preference on all U.K. imports from British countries was only 2–3%, well below the average preference enjoyed by British exports to the Commonwealth as a whole, and very much less than the preferences accorded by countries such as Australia and New Zealand, which, even in 1929, averaged 13–14% and 16% respectively. It would, however, be unwise to make too much of these comparisons, since, among other things, the conditions governing markets for primary products and for manufactures are very different.

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[21] Figures for countries for which 1948 material was not available assumed to have changed since 1937 in same proportion as average of rest.

[22] Refers to imports from the U.K. that were covered in this calculation.

[23] This figure is relatively low because *Report on Trade and Shipping of the Dominion of New Zealand 1948* was not available when the calculations were made. See footnote 1 to Table II.

[24] Fall from 1929 due wholly to change in pattern of trade.

[25] Large part of rise 1929–37 and fall 1937–48 due to changes in pattern of trade (see also footnote 1 to p. 252).

[26] Duties are levied only on intoxicating liquors and tobacco.

[27] In 1948 some of the duties listed in the printed Customs tariffs were wholly or partially suspended. Allowing for these suspensions the figures in columns C–E would be approximately :

	C.	D.	E.
Southern Rhodesia . .	92	13	12
Northern Rhodesia . .	59	8	5

[28] In Singapore the only Customs duties levied are on intoxicating liquors, tobacco and petroleum. In Singapore and Hong Kong there is also a " first registration fee " of 15% on motor vehicles not of British Commonwealth origin. This was treated as a preference of 15%.

[29] Included in India for 1929 in respect of C, D and E.

The goods that enjoyed preference often had to pay a high rate of duty, usually of a revenue nature. The average worked out at about 100%, so that the margin of preference reckoned as a percentage of price *including* duty on Commonwealth goods was much lower than the figure of 30–50% given in the last paragraph.

The Position in 1937

(a) *Preferences Accorded U.K. goods in British Countries in* 1937

Between 1932 and 1935 many British countries introduced preferences on U.K. goods for the first time. These included the Straits Settlements, the Federated Malay States, Hong Kong, Ceylon and Malta among the countries included in our calculations, and other small trading countries such as Gambia, Sierra Leone, St. Helena, Seychelles, Gilbert and Ellice Islands, Solomons and Tonga. In addition, many countries that had already been granting preference in 1929 widened the range of their imports from Britain on which preference was given.

By 1937 the proportion of U.K. exports to the Commonwealth enjoying preference had, according to our calculations, risen to about 56%, compared with about 36% in 1929. This increase is due in part to a change in the pattern of trade, which would have raised the 1929 figure of 36% to about 40% in 1937, even if there had been no extension of preference; [1] but the great bulk of the rise to 56% is the result of new preferences. Those granted by India and Canada were of major importance.

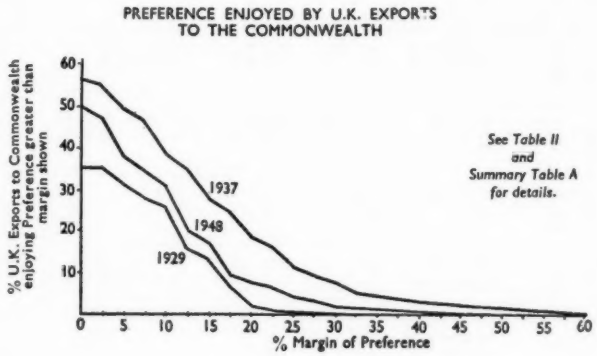
Alongside the rise in the proportion of U.K. goods enjoying preference, there were substantial increases in the margins of preference on preferred goods. The proportion of U.K. exports to the Commonwealth enjoying preferences of over 20% jumped from one-fortieth in 1929 to one-fifth in 1937. The average preference on goods receiving preference rose from 13% to 19–20%.

As a result of these two developments—new preferences and increases in the margins—the average rate of preference on all U.K. exports to the Commonwealth rose from 5% in 1929 to 10–11% in 1937. Not much of this rise can be accounted for by changes in the pattern of trade or by changes in prices that altered

[1] In particular, a large part of the rise in the proportion of South African imports from the U.K. granted preference from about 28% in 1929 to 40% or more in 1937 can be accounted for by the change in the pattern of trade, while the surprising fall in the percentage for Trinidad and Tobago is entirely due to the change in the trade pattern.

the *ad valorem* incidence of specific duties. It was mainly the result of changes in rates of duty.

How far were these results accomplished by reducing rates of duty on U.K. goods, and how far by increasing the rates on goods from other countries (represented by the United States according



to our definition)? It is convenient to consider separately the manner in which: (i) margins of preference were widened on goods already enjoying preference in 1929; (ii) preferences were accorded to new goods.

(i) *Goods already enjoying preference in* 1929. We have worked out for 1929 the average rate of duty on U.K. goods (the U.K. rate) and the rate they would have paid had they been American (the U.S. rate). We have also worked out for comparison what the U.K. and U.S. rates would have been if the 1937 tariff lists had been operative in 1929, *i.e.*, we have applied the 1937 tariff rates to the 1929 trade. In this way we can eliminate the effects of changes in the pattern of trade and in prices, and are left with the effects of changes in tariff lists on the U.S. and U.K. rates.

In most countries the U.S. rate for 1937 is higher than that for 1929, and for all countries taken together it rises from 25–30% in 1929 to 33–36% in 1937. The average U.K. rate remained at around 15% in each year. However, the fall in prices between 1929 and 1937 raised the percentage rate on U.K. goods to 17–19%, and that on U.S. goods was raised further to 37–41%.

TABLE II

% Distribution of British Countries' Imports from the U.K. According to Margin of Preference Granted

	South Africa.			Australia.[16]			India.			Canada.			Eire.		
	1929.	1937.	1948.	1929.	1937.	1948.	1929.	1937.	1948.	1929.	1937.	1948.	1929.	1937.	1948.
Coverage, %:	99·5	95·8	96·6	85·3 [6]	86·3 [7]	93·1	97·0	99·1	98·7	100·0	99·2	96·9	98·9	89·0 [10]	96·8
Percentage margin.															
0	71·9	59·4	68·3	7·5	12·7	10·7	94·3	49·8	76·0	37·8	12·6	12·9	92·3	84·8	72·3
Up to 2·5	0·1	0·2	2·7	0·2	0·0	6·9	—	2·6	1·7	2·1	—	6·4	0·1	0·1	0·3
2·6– 5·0	25·5	27·9	27·9	0·4	0·4	8·1	—	0·4	—	5·2	0·2	6·2	2·2	1·0	0·5
5·1– 7·5	1·3	1·4	0·1	5·7	0·1	3·5	5·4	4·3	5·3	3·0	0·9	18·7	0·0	0·0	3·3
7·6–10·0	1·2	1·6	0·9	0·5	1·3	3·9	—	30·2	1·2	8·7	4·4	10·6	0·1	0·6	2·9
10·1–12·5	—	0·0	0·0	30·3	2·9	26·9	—	2·0	13·5	30·6	7·4	4·7	5·2	0·8	11·1
12·6–15·0	—	9·2	—	3·2	18·1	6·0	0·3	1·0	—	8·1	9·4	4·7	—	0·5	0·7
15·1–17·5	—	0·2	—	37·8	10·5	12·2	—	—	—	3·9	8·9	20·6	—	2·1	2·3
17·6–20·0	0·0	0·0	—	3·4	14·0	0·5	—	0·2	—	0·5	13·8	4·1	—	0·4	1·0
20·1–22·5	—	—	—	3·3	11·5	4·1	—	—	0·0	0·1	2·6	4·2	0·0	0·9	0·1
22·6–25·0	—	0·1	—	0·0	1·0	5·6	—	9·5	0·8	0·0	12·6	6·0	0·1	0·6	2·9
25·1–27·5	—	—	—	3·2	9·3	3·9	—	—	—	—	2·6	0·8	—	—	0·0
27·6–30·0	—	—	—	0·1	3·4	2·8	—	—	0·0	0·0	4·3	0·1	0·0	0·0	0·1
30·1–32·5	—	—	0·0	2·5	6·2	2·1	—	—	—	—	8·4	—	—	0·0	—
32·6–35·0	—	—	0·1	0·3	1·6	0·2	—	—	—	0·0	1·2	0·0	—	0·0	0·0
35·1–37·5	—	0·0	—	0·4	0·6	0·4	—	—	—	0·0	0·9	0·0	—	—	—
37·6–40·0	—	—	—	0·2	1·1	0·6	—	—	0·3	0·0	3·9	0·0	—	0·0	0·6
40·1–42·5	—	—	—	0·4	0·7	0·0	—	—	1·2	—	0·5	0·0	0·0	0·0	0·1
42·6–45·0	—	—	—	0·6	0·2	0·3	—	—	—	—	0·8	—	—	—	0·6
45·1–47·5	—	—	—	—	0·1	0·0	—	—	—	—	0·2	—	—	—	0·0
47·6–50·0	—	—	—	0·0	0·1	0·1	—	—	—	—	—	—	—	—	—
50·1–52·5	—	—	—	0·0	3·0	0·6	—	—	—	—	0·1	—	—	—	—
52·6–55·0	—	—	—	0·0	0·1	0·5	—	—	—	0·0	0·8	—	—	—	0·1
55·1–57·5	—	—	—	—	0·3	0·1	—	—	—	—	0·1	—	—	—	0·6
57·6–60·0	—	—	—	—	0·1	—	—	—	—	—	0·0	—	—	—	0·2
60·1 and over	—	—	—	0·0	0·7	0·0	—	—	—	0·0	3·4	—	—	—	0·3
	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	91·8 [9]	100·0

	New Zealand.			Straits Settlements.			Ceylon.			Hong Kong.			Southern Rhodesia.		
	1929.	1937.	1948.	1929.	1937.	1948.	1929.	1937.	1948.	1929.	1937.	1948.	1929.	1937.	1948.
Coverage, %:	99·5	99·5	99·5	99·5	99·5	99·5	99·5	99·5	99·5	99·5	99·5	99·5	99·5	99·5	99·5
Percentage margin.															
0	94·3	94·3	94·3	99·5	99·5	99·5	99·5	99·5	99·5	99·5	99·5	99·5	99·5	99·5	99·5
Up to 2·5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2·6– 5·0	5·7	5·7	5·7	—	—	—	—	—	—	—	—	—	—	—	—
5·1– 7·5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
7·6–10·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10·1–12·5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12·6–15·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15·1–17·5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
17·6–20·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20·1–22·5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
22·6–25·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25·1–27·5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
27·6–30·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
30·1–32·5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
32·6–35·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35·1–37·5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
37·6–40·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
40·1–42·5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
42·6–45·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
45·1–47·5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
47·6–50·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
50·1–52·5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
52·6–55·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
55·1–57·5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
57·6–60·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
60·1 and over	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0

	New Zealand.			Straits Settlements.			Ceylon.			Hong Kong.			Southern Rhodesia.		
	1929.	1937.	1948.	1929.	1937.	1948.	1929.	1937.	1948.	1929.	1937.	1948.	1929.	1937.	1948.
Coverage, % :	96·3	94·8	67·4 [1]	100·0	100·0	99·6	100·0	81·8 [3]	96·6	100·0	100·0	100·0	95·7	97·5	97·6
Percentage margin.															
0	14·4	10·8	10·4	100·0	76·5	77·1	100·0	17·1	35·4	100·0	95·2	92·8	5·3	4·1	2·7
Up to 2·5	0·0	0·1	0·0	—	—	—	—	0·1	0·2	—	—	—	1·1	0·4	0·9
2·6– 5·0	0·1	0·3	0·1	—	—	—	—	19·4	12·8	—	—	—	48·2	30·2	33·4
5·1– 7·5	0·9	6·7	3·0	—	—	0·3	—	10·8	13·1	—	—	0·3	18·7	1·6	0·8
7·6–10·0	7·1	3·1	9·0	—	14·9	—	—	47·9	38·4	—	0·2	—	0·1	20·4	8·7
10·1–12·5	0·4	8·7	12·2	—	—	—	—	—	0·0	—	—	—	21·2	5·2	3·8
12·6–15·0	10·9	0·7	1·9	—	—	8·1	—	—	0·0	—	3·1	—	0·4	9·6	17·4
15·1–17·5	0·3	2·6	31·4	—	—	14·5	—	0·5	—	—	—	6·3	2·6	0·0	0·4
17·6–20·0	58·0	9·5	0·0	—	8·6	—	—	3·8	0·1	—	1·5	—	0·3	6·7	23·8
20·1–22·5	0·0	4·5	2·8	—	—	—	—	—	—	—	—	—	1·8	0·0	0·0
22·6–25·0	4·5	10·8	7·4	—	—	—	—	—	—	—	—	—	—	2·0	2·8
25·1–27·5	—	0·7	0·0	—	—	—	—	0·4	—	—	—	—	0·1	—	—
27·6–30·0	3·0	18·4	11·8	—	—	—	—	—	—	—	—	—	—	1·9	1·2
30·1–32·5	—	1·5	3·7	—	—	—	—	—	—	—	—	—	0·1	0·1	—
32·6–35·0	—	7·7	2·2	—	—	—	—	—	—	—	—	—	—	0·7	1·2
35·1–37·5	—	0·4	0·0	—	—	—	—	—	—	—	—	—	—	—	—
37·6–40·0	—	0·3	0·0	—	—	—	—	—	—	—	—	—	—	0·2	—
40·1–42·5	—	0·1	0·7	—	—	—	—	—	—	—	—	0·6	—	0·0	—
42·6–45·0	0·3	—	2·7	—	—	—	—	—	—	—	—	—	—	—	—
45·1–47·5	—	13·1	0·0	—	—	—	—	—	—	—	—	—	—	0·1	—
47·6–50·0	0·1	0·0	0·7	—	—	—	—	—	—	—	—	—	—	—	—
50·1–52·5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
52·6–55·0	—	—	—	—	—	—	—	—	—	—	—	—	—	12·7	—
55·1–57·5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
57·6–60·0	—	—	—	—	—	—	—	—	—	—	—	—	—	0·1	—
60·1 and over	0·0	0·0	—	—	—	—	—	—	—	—	—	—	0·1	4·0	2·9
	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0

Notes to Table on p. 250.

TABLE II—(*continued*)

	Federated Malay States.			Trinidad and Tobago.			Jamaica.			Malta.			British Guiana.		
	1929.	1937.	1948.	1929.	1937.	1948.[3]	1929.	1937.	1948.[3]	1929.	1937.	1948.	1929.	1937.	1948.[3]
Coverage, %:	100·0	85·3 [9]	99·1	93·8	99·4	—	99·7	93·9	—	100·0	100·0	96·4	97·9	98·6	—
Percentage margin.															
0	100·0	48·8	64·0	10·7	36·3		16·5	18·4		100·0	29·9	24·7	10·1	7·5	
Up to 2·5	—	0·6	—	2·1	0·3		0·2	0·2		—	0·1	0·1	0·2	0·0	
2·6– 5·0	—	—	7·3	4·2	0·4		56·9	36·7		—	2·7	8·5	10·3	8·8	
5·1– 7·5	—	6·4	0·1	10·4	1·5		0·1	0·1		—	0·8	0·9	18·5	20·2	
7·6–10·0	—	28·0	9·4	21·2	8·9		19·4	26·6		—	52·3	6·9	3·9	8·7	
10·1–12·5	—	—	0·0	38·4	39·2		1·5	4·5		—	1·1	4·7	2·1	3·3	
12·6–15·0	—	—	1·3	0·3	0·5		0·2	1·6		—	1·2	51·4	2·8	12·9	
15·1–17·5	—	—	1·1	0·3	1·9		0·0	1·7		—	3·5	0·4	29·9	24·9	
17·6–20·0	—	8·2	16·2	3·3	1·6		0·1	4·1		—	5·0	1·2	6·8	2·7	
20·1–22·5	—	—	—	7·3	2·9		0·0	0·1		—	—	1·2	4·2	0·1	
22·6–25·0	—	—	0·6	0·7	2·3		0·1	0·2		—	—	—	4·2	0·2	
25·1–27·5	—	—	—	0·8	0·6		0·2	0·2		—	3·3	—	0·1	0·8	
27·6–30·0	—	6·9	—	0·2	0·1		—	1·7		—	—	—	0·7	0·6	
30·1–32·5	—	—	—	0·1	0·0		—	—		—	—	0·0	0·1	0·0	
32·6–35·0	—	—	—	—	—		0·0	2·0		—	—	—	0·8	0·0	
35·1–37·5	—	—	—	0·0	0·1		—	0·0		—	0·0	—	0·0	2·0	
37·6–40·0	—	—	—	0·0	0·0		2·0	0·6		—	—	—	0·0	0·0	
40·1–42·5	—	—	—	—	0·9		—	0·2		—	—	0·0	0·0	0·0	
42·6–45·0	—	—	—	0·0	0·0		—	0·5		—	—	—	0·0	0·1	
45·1–47·5	—	—	—	—	—		—	—		—	—	—	—	—	
47·6–50·0	—	—	—	—	—		—	0·1		—	—	—	0·0	—	
50·1–52·5	—	—	—	—	0·0		—	—		—	—	—	0·0	0·0	
52·6–55·0	—	—	—	—	0·0		—	—		—	—	—	—	0·2	
55·1–57·5	—	—	—	0·0	0·2		—	—		—	—	—	0·4	0·5	
57·6–60·0	—	—	—	—	0·0		—	—		—	—	—	0·2	—	
60·1 and over	—	1·1	—	0·0	2·3		2·8	0·5		—	0·1	—	4·7	6·5	
	100·0	100·0	100·0	100·0	100·0		100·0	100·0		100·0	100·0	100·0	100·0	100·0	

	Gibraltar.			Northern Rhodesia.			All British countries covered.[11]			U.K. imports from British countries according to margin of preference granted.					
	1929.	1937.	1948.	1929.	1937.	1948.[3]	1929.	1937.	1948.[3]	1929.	1937.	1948.	1929.	1937.	1948.[3]
Coverage, %:	100·0	100·0	100·0	100·0	100·0	—	100·0	100·0	—	100·0	100·0	100·0	100·0	100·0	—
Percentage margin.															
0	100·0	100·0	100·0	100·0	100·0		100·0	100·0		100·0	100·0	100·0	100·0	100·0	
Up to 2·5	—	—	—	—	—		—	—		—	—	—	—	—	
2·6– 5·0	—	—	—	—	—		—	—		—	—	—	—	—	
5·1– 7·5	—	—	—	—	—		—	—		—	—	—	—	—	
7·6–10·0	—	—	—	—	—		—	—		—	—	—	—	—	
10·1–12·5	—	—	—	—	—		—	—		—	—	—	—	—	
12·6–15·0	—	—	—	—	—		—	—		—	—	—	—	—	
15·1–17·5	—	—	—	—	—		—	—		—	—	—	—	—	
17·6–20·0	—	—	—	—	—		—	—		—	—	—	—	—	
20·1–22·5	—	—	—	—	—		—	—		—	—	—	—	—	
22·6–25·0	—	—	—	—	—		—	—		—	—	—	—	—	
25·1–27·5	—	—	—	—	—		—	—		—	—	—	—	—	
27·6–30·0	—	—	—	—	—		—	—		—	—	—	—	—	
30·1–32·5	—	—	—	—	—		—	—		—	—	—	—	—	
32·6–35·0	—	—	—	—	—		—	—		—	—	—	—	—	
35·1–37·5	—	—	—	—	—		—	—		—	—	—	—	—	
37·6–40·0	—	—	—	—	—		—	—		—	—	—	—	—	
40·1–42·5	—	—	—	—	—		—	—		—	—	—	—	—	
42·6–45·0	—	—	—	—	—		—	—		—	—	—	—	—	
45·1–47·5	—	—	—	—	—		—	—		—	—	—	—	—	
47·6–50·0	—	—	—	—	—		—	—		—	—	—	—	—	
50·1–52·5	—	—	—	—	—		—	—		—	—	—	—	—	
52·6–55·0	—	—	—	—	—		—	—		—	—	—	—	—	
55·1–57·5	—	—	—	—	—		—	—		—	—	—	—	—	
57·6–60·0	—	—	—	—	—		—	—		—	—	—	—	—	
60·1 and over	—	—	—	—	—		—	—		—	—	—	—	—	
	100·0	100·0	100·0	100·0	100·0		100·0	100·0		100·0	100·0	100·0	100·0	100·0	

	Gibraltar.			Northern Rhodesia.			All British countries covered.[11]			U.K. imports from British countries according to margin of preference granted.		
	1929.	1937.	1948.[3]	1929.	1937.	1948.	1929.	1937.	1948.	1929.	1937.	1948.
Coverage, % :	100·0	100·0	—	99·3	84·0 [4]	88·3 [5]				96·3 [13]	91·0 [14]	90·4 [15]
Percentage margin.												
0	95·3	95·0		58·2	4·2	2·4	64·8	46·3 [12]	51·7	96·5	41·4	49·7
Up to 2·5	—	—		1·8	1·4	0·3	0·3	0·5	2·6	0·4	—	3·0
2·6– 5·0	—	—		2·1	40·4	22·0	3·9	6·2	7·8	1·1	10·6	0·2
5·1– 7·5	—	—		7·2	0·1	0·2	3·0	1·9	3·2	0·1	—	13·7
7·6–10·0	—	—		2·7	16·9	63·5	1·7	8·5	4·8	0·0	19·4	22·7
10·1–12·5	1·6	1·7		20·4	13·7	0·1	9·7	2·7	9·9	0·5	0·2	1·0
12·6–15·0	3·1	—		0·0	20·2	6·5	2·3	6·3	2·9	—	17·5	4·3
15·1–17·5	—	—		7·0	0·4	—	7·1	3·3	7·2	0·7	1·9	0·2
17·6–20·0	—	—		0·6	0·3	0·7	4·7	5·5	1·4	—	4·7	4·3
20·1–22·5	—	—		—	—	—	0·6	2·7	1·4	0·0	0·0	0·7
22·6–25·0	—	—		—	—	—	0·3	4·2	2·6	—	0·1	0·0
25·1–27·5	—	—		—	—	—	0·6	1·9	0·8	—	0·1	—
27·6–30·0	—	—		0·0	—	—	0·2	2·8	1·4	—	0·4	0·1
30·1–32·5	—	—		—	—	—	0·4	2·2	0·7	—	0·2	0·0
32·6–35·0	—	—		—	—	—	0·1	1·1	0·2	0·1	1·2	0·1
35·1–37·5	—	—		—	0·1	—	0·1	0·2	0·1	—	0·5	—
37·6–40·0	—	—		—	2·3	4·3	0·0	0·7	0·2	—	—	—
40·1–42·5	—	—		—	—	—	0·1	0·2	0·3	—	—	—
42·6–45·0	—	—		—	—	—	0·1	0·1	0·3	—	—	—
45·1–47·5	—	—		—	—	—	—	1·2	—	0·1	0·2	—
47·6–50·0	—	—		—	—	—	0·0	0·0	0·1	—		0·0
50·1–52·5	—	—		—	—	—	—	0·5	0·1	—		—
52·6–55·0	—	3·3		—	—	—	—	0·3	0·1	—		—
55·1–57·5	—	—		—	—	—	—	0·1	0·1	—	1·6	—
57·6–60·0	—	—		—	—	—	—	0·0	0·0	—		—
60·1 and over	—	—		—	—	—	0·0	0·6	0·1	0·5		—
	100·0	100·0		100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0

Notes to Table on p. 250.

(ii) *Goods First Granted a Preference between* 1929 *and* 1937. On only one-tenth of these goods, by value, was the rate payable on U.K. goods reduced. On 95% the rate on U.S. goods was increased and on no less than 60% the rate on U.K. goods was increased as well.

The increase in preference accorded to U.K. goods in British countries during this period was thus achieved very largely by increasing the rates on foreign goods, and only in minor degree by reducing the rates on U.K. goods; on the contrary, these tended to be increased as well.

GENERAL NOTES TO TABLE II

In Table I outside limits were given instead of precise figures where it was impossible to reconcile the tariff list with the trade return for particular items. These imprecise items have been omitted from the frequency distributions in Table II so as to obtain a clearer presentation of the data, and the coverage for the frequency distributions is therefore less good than for the calculations whose results are shown in Table I. The coverage is, however, given for each distribution, and it will be seen that it is generally sufficient to give a fairly complete picture of amounts of preference granted. Where coverage is definitely insufficient (Channel Islands and Burma) distributions have not been constructed.

For reasons of presentation, figures are given to one decimal point, but this degree of precision should not be taken as an indication of the margin of error involved.

See also notes to Table I.

FOOTNOTES TO TABLE II

[1] Calculation made from *External Trade 1948* (Census and Statistics Department, Wellington, N.Z., 1951), as *Report on Trade and Shipping of the Dominion of New Zealand 1948* was not available when the calculations were made. Of trade omitted at least 12% (of imports from U.K.), probably much more, granted preferences of 7·6–17·5%.

[2] Sufficiently recent trade figures not available when calculation was made.

[3] Additional duty of 10% on 8·2% of goods imported from the U.K.

[4] Over half trade omitted granted preference of 5% or 10%. The rest was granted none or preferences of up to 25%.

[5] Trade omitted was mostly granted 5% or 10% preference.

[6] Of trade omitted 7% (of imports from U.K.) was granted preference of 11–15%. Rest was granted none or preferences of up to 85%.

[7] Of trade omitted 4% (of imports from the U.K.) was granted preference of 13–22%. Rest was granted none or preferences of up to and over 100%.

[8] Most of trade omitted was either granted no preference or a preference of 10%.

[9] Most of trade omitted was either granted no preference or preferences of up to 15%.

[10] Preference on trade omitted varied between −10% (see note 3) and over 100%.

[11] Excluding British Guiana, Jamaica, Trinidad and Tobago and Gibraltar. Including territories granting no preference in 1948.

[12] Including 0·8 exports to Eire, on which additional duty of 10%.

[13] Of trade omitted 2·7% was granted preference of between 27% and 61%, 0·4% was granted preference of between 2% and 10%. The preference granted on the rest varied up to over 200%.

[14] Of trade omitted, at least 4·1% was granted preference at rates well above 30%, and at least a further 1·4% at rates above 15%. The rest was granted either no preference or preferences varying up to 25%.

[15] Of trade omitted, at least 3% was granted preference of 20% or less. A further 1·5% was granted either no preference or various rates up to 33·3%. A further 3% was granted preference of between 9% and 28%, and nearly a further 2% was granted preference of 47–53%.

[16] See footnote 4 to Table I.

(b) *Preferences accorded by U.K. on Imports from British countries in* 1937.

The Import Duties Act and the Ottawa Agreements greatly widened the scope of preference on U.K. imports from the Commonwealth. By 1937 over 60% of such imports enjoyed preference, compared with only 7% in 1929.

The average margin on goods accorded preference fell greatly, but this has no signficance, since the high level in 1929 reflected exceptional margins on a very few items, and the great bulk of the new preferences were of not more than 20%.

The average margin on all U.K. imports from British countries was raised from 2–3% to 10–12%, *i.e.*, to roughly the same average level as that enjoyed by U.K. exports to the Commonwealth as a whole.

A large part of this increase was, of course, achieved by imposing a tariff on foreign goods while retaining duty-free entry for goods from British countries. Taken in conjunction with the results obtained for U.K. exports to the Commonwealth, this means that the intensification of Imperial Preference during the thirties was achieved largely by increasing tariffs against the outside world, rather than by reducing tariffs between Commonwealth countries.

The Position in 1948

Between 1937 and 1948 there were important reductions in Imperial Preference. The average percentage margins of preference fell at least half-way back to the pre-Ottawa level. This was the result partly of the large rise in prices which reduced the *ad valorem* incidence of specific duties and partly of alterations in rates of duty made at the Geneva Tariff Negotiations under G.A.T.T. in 1947 and, for example, in the Trade Agreements between the U.K. and the U.S. (1938), the U.S. and Canada (1938) [1] and the U.K. and India (1939). (On the other hand, increased preferences were obtained under the U.K./Eire Agreement of 1938.) But while the average rate of preference was markedly reduced, the general structure of preference was not seriously modified; the proportion of intra-Commonwealth trade enjoying preference did not fall greatly.

[1] This Agreement made various changes which reduced the preference accorded to U.K. over U.S. goods, including the removal of a special excise tax on a long list of goods imported from non-British countries.

(a) *Preferences Accorded U.K. goods in British Countries in* 1948

The proportion of U.K. exports to British countries enjoying preference fell from about 56% in 1937 to about 50% in 1948, and a significant part of this fall can be explained by changes in the pattern of trade. The elimination of preferences was thus relatively unimportant. The proportion of trade enjoying preference fell quite markedly in South Africa, but this was largely the result of changes in the trade pattern.[1] India is the only important country where the elimination of preferences was of major significance (partly as a result of the 1939 Trade Agreement with the U.K.); the proportion of trade accorded preference fell from 50% in 1937 to about 25% in 1948, but even here some 10 points of the fall was the result of changes in the pattern of trade.[2]

But while comparatively few preferences were eliminated between 1937 and 1948, there were large falls in many percentage rates of preference. The average rate on goods receiving preference fell from 19–20% to 14–15%; and as changes in the trade pattern tended to increase the average rate, the true fall on a comparable basis was larger, and probably about one-third (roughly from 22% to 14%). High preferences became much less important; the proportion of Britain's exports to the Commonwealth enjoying preferences of over 20% fell from one-fifth in 1937 to under one-tenth in 1948.

The average margin of preference on *all* U.K. exports to the Commonwealth fell from 10–11% to 7% and by rather more assuming a constant pattern of trade. Of this fall about half seems to have been due to the rise in prices and about half to tariff changes.

The fall in margins of preference was on balance, but not in all countries, associated with reductions in *percentage* rates of duty both on U.K. and on U.S. goods. There were, it is true, steep increases in the *tariff rates* charged by some of the Colonies, partly no doubt to maintain the real value of revenue from specific duties in the face of rising prices; and for all countries taken together we find some increase in the average U.K. and U.S. rates on goods enjoying preference in 1948 when the effects of changes in prices

[1] We are advised that these changes were temporary and resulted from Britain's inability to supply South Africa with many goods on which preferences were granted.

[2] The Geneva Agreement of 1947 scheduled the elimination of preferences on 8% of Canada's imports from the U.K. (1937 trade), but 7% of this consisted of items on which the duty on the U.K. product was to be raised. This required specific legislation which was not completed until 1949. Its effect does not therefore appear in the 1948 figures given here.

and in the pattern of trade have been eliminated. But the rise in prices more than offset these increases in tariff rates. The net result was that, for all countries taken together, the U.K. rate fell from 17–20% in 1937 to 14% in 1948 and the U.S. rate from 38–43% to 27–29% (based on the 1948 pattern of trade throughout).

(b) *Preferences Accorded by the U.K. on Imports from British Countries in* 1948

Between 1937 and 1948 there was some fall in the proportion of U.K. imports from the Commonwealth enjoying preference—roughly from 60% to 55%. Since the change in the pattern of trade tended to increase this proportion, the true fall was larger.

There was a large fall in the average margin of preference on goods receiving preference, from 17–20% to 11–13%; and, as the change in the trade pattern tended to increase the average margin, the true fall was greater, and probably about one-half. The proportion of trade enjoying preferences of over 10% fell from one-third to one-sixth.

The average rate on all imports fell from 10–12% to 6–7%. Using the 1948 pattern of trade throughout, the fall is greater, from 14–18% to 6–7%. Of this fall well under one-half seems to have been due to tariff changes, and well over one-half to the rise in prices which reduced the *ad valorem* incidence of specific duties; U.K. import prices in general nearly trebled between 1937 and 1948, and specific duties were of importance for many imports from British countries.

The fall in preferential margins was accompanied by large increases in rates of Customs duty, which were not wholly offset by the effects of higher prices, on imports from both Commonwealth and non-Commonwealth countries. But many of these increases were imposed for revenue purposes, and were largely matched by increases in excise duty. The average rate of Customs duty less excise duty on goods enjoying preference in 1948 fell from 6–10% to 2–4% for imports from Commonwealth countries and from 24–33% to 13–16% for imports from other sources (based on the 1948 pattern of trade throughout). These falls reflect wholly the effect of the rise in prices on the *ad valorem* incidence of specific duties.

Thus, for trade in each direction between Britain and the Commonwealth, the reduction in Imperial Preference between 1937 and 1948 was accompanied by a general fall in percentage rates of duty (net of excise duty for U.K. imports), just as the

TABLE III

Average Rates of Duty on

	Goods already enjoying preference in 1929 (1929 pattern of trade).					
	1929 tariff rates. 1929 prices.		1937 tariff rates.			
			1929 prices.		1937 prices.	
	(1)		(2)		(3)	
	U.K. rate.	U.S. rate.	U.K. rate.	U.S. rate.	U.K. rate.	U.S. rate.
Union of South Africa	3	7	6–7	12–15	6–7	12–15
Australia (*c*)	14–23	29–39	17–20	37–43	18–21	39–45
India	11–17	18–26	7–8	11–13	9–10	14–16
Canada	17	28	18	42–43	18	42–43
Eire	31–37	40–45	77–90	106–126	92–108	127–150
New Zealand	10–11	29–30	9	32–33	9	33
Straits Settlements	(*b*)	(*b*)	(*b*)	(*b*)	(*b*)	(*b*)
Channel Islands	0	92–99	0	82–94	0	105–121
Ceylon	(*b*)	(*b*)	(*b*)	(*b*)	(*b*)	(*b*)
Hong Kong	(*b*)	(*b*)	(*b*)	(*b*)	(*b*)	(*b*)
Burma	Included in India					
Southern Rhodesia	5	12	4–5	18–19	5	19–20
Federated Malay States	(*b*)	(*b*)	(*b*)	(*b*)	(*b*)	(*b*)
Trinidad and Tobago	9–12	20–27	12–13	30–31	14	34–35
Jamaica	23	31	19–20	32–34	20–21	34–36
Malta	(*b*)	(*b*)	(*b*)	(*b*)	(*b*)	(*b*)
British Guiana	16	32	23–24	44–47	27–29	53–56
Gibraltar	40	53	40	53	51	68
Northern Rhodesia	9–10	19	9–10	20–22	9–11	21–23
Weighted average	13–16	25–30	14–16	33–36	17–19	37–41

U.K. rate : average percentage rate of duty on goods from the U.K.

U.S. rate : average percentage rate of duty had goods been from the U.S.

Change from (1) to (2) and from (4) to (5) reflects change in tariff rates.

Change from (2) to (3) and from (5) to (6) reflects change in prices (which affects *ad valorem* incidence of specific duties).

The high average rates of duty shown for some countries (such as Straits Settlements, Hong Kong, Federated Malay States and Gibraltar) are attributable in large part to the limited range of goods that enjoy tariff preferences and to the high level of duties on intoxicating liquors and tobacco (which are preferential).

increase in preference in the thirties had been accompanied by a general rise.

The Present Position (*mid*-1953)

Five years have elapsed since 1948, the latest year for which calculations have been made. Since then there have been further reductions in Imperial Preference, although the general picture given for 1948 cannot have been radically modified.

Probably the most important change has been the reduction

Goods Enjoying Preference

	Goods still enjoying preference in 1948 (1948 pattern of trade).					
	1937 tariff rates. 1937 prices.		1948 tariff rates.			
			1937 prices.		1948 prices.	
	(4)		(5)		(6)	
	U.K. rate.	U.S. rate.	U.K. rate.	U.S. rate.	U.K. rate.	U.S. rate.
Union of South Africa	3	8–11	3	8–9	2–3	7
Australia (*c*)	18–20	42–46	15–16	37–41	9	23–25
India	22	32	26–27	38–39	25–26	38–39
Canada	15	41	18	36	10	22
Eire	68–103	95–145	72–79	96–107	35–38	50–55
New Zealand	7–8	30–32	7–8	25–26	6–8	24–26
Straits Settlements	60	72	296	331	108	124
Channel Islands	0	36–45	0	62–65	0	33–38
Ceylon	14–15	22–24	26–27	35–36	23–24	31–32
Hong Kong	30–34	45–48	96–109	136–137	59–68	83–84
Burma	20–26	32–40	24–25	42–43	24	41
Southern Rhodesia	5	25	5	20	5	20
Federated Malay States	32	44	284–286	317–319	96	109–110
Trinidad and Tobago	(*a*)	(*a*)	(*a*)	(*a*)	(*a*)	(*a*)
Jamaica	(*a*)	(*a*)	(*a*)	(*a*)	(*a*)	(*a*)
Malta	12–13	24	27–29	41–42	19–20	33
British Guiana	(*a*)	(*a*)	(*a*)	(*a*)	(*a*)	(*a*)
Gibraltar	(*a*)	(*a*)	(*a*)	(*a*)	(*a*)	(*a*)
Northern Rhodesia	6–7	17–19	14–15	30–39	7–8	17–18
Weighted average	17–20	38–43	24–26	42–47	14	27–29

The figures for India, Burma and the Channel Islands are subject to particularly wide margins of error, possibly wider than those shown in the table.

See also notes to Summary Table C and to Table I.

(*a*) Not calculated; no sufficiently recent trade returns available when work was done.

(*b*) No preference in 1929.

(*c*) In all years amounts of duty paid were expressed as a percentage of the f.o.b. value of imports in terms of Australian currency in order to achieve comparability between the years (see footnote 4 to Table I).

in the *ad valorem* incidence of specific margins caused by a further rise in prices—British import and export prices in general have risen by around 25–30%. The results of the Annecy and Torquay tariff negotiations under G.A.T.T. in 1949 and 1951 scarcely affect our average figures, and it is unlikely that the reduction of preferences brought about in other ways has been much more important. The pattern of trade has also altered. We have not calculated the effect, beyond establishing that the shift in U.K. exports between Commonweath countries granting different

average margins of preference has on balance been of no importance.

It is impossible to give any precise details of the present position, but what rough calculations we have been able to make suggest that the following broad picture is unlikely to be very wide of the mark.

Something like one-half of both British exports to and imports from the Commonwealth enjoy preference, but in some Commonwealth markets for U.K. exports the proportion is much higher. Well under one-tenth of the trade in either direction enjoys preferences of over 20%, although there are still a few very high preferences of 50% or more. The average percentage margin of preference on all U.K. trade with the Commonwealth has been greatly reduced since the late thirties, and is now probably in the neighbourhood of 6% in either direction. The margin is still smaller—probably around 5% on U.K. exports to the Commonwealth—if it is reckoned as a percentage of the value of trade *including* duty on British goods, which is more relevant when assessing competitive power.

A figure of 5% may seem surprisingly low to those with experience of very high preferential margins; but such margins, as we have seen, are few and far between. There is no doubt that preferences are of very considerable importance in certain trades, where the rate is relatively high or the market highly competitive and sensitive to price differentials. For many years tariff preferences were overshadowed by direct trade and exchange controls and by the existence of sellers' markets. They will regain importance to the extent that these conditions change. But the effect of preferences on our total export trade cannot be more than marginal. Following a rough method of calculation used in an earlier article,[1] it seems unlikely that an average preference of around 5% on our exports to the Commonwealth can make a difference of more than, say, 5% in our total exports to the world as a whole—although even marginal exports of this size can, of course, be of crucial importance while the balance of payments remains precarious. It is certain that the effect of Imperial Preference on the total sales of U.S. manufacturers is entirely negligible.

Summary of Main Results

Even before Ottawa, Britain was enjoying an average preference of 13% on over one-third of her exports to British coun-

[1] ECONOMIC JOURNAL, September 1952, p. 509.

tries, giving an average preference of 5% on all her exports to the Commonwealth. In return she gave preferences (admittedly high ones) on only 7% of her imports from the Commonwealth, making an average rate of preference of 2–3% on all her imports from British countries.

By 1937, mainly as a result of the Ottawa Agreements, the proportion of trade enjoying preference had risen to well over one-half in each direction, and many old preferences had been increased. This intensification of Imperial Preference, which was considerably more important for Britain's imports than for her exports, raised the average margin of preference to 10–12% on all trade in each direction. It was achieved largely by raising tariff rates on foreign goods and not by reducing rates on intra-Commonwealth trade; the latter, on the contrary, tended to rise as well.

Since 1937 there has been a large reduction in Imperial Preference. The proportion of trade enjoying preference has not fallen greatly, and is still about one-half in each direction. But the average rate has fallen to about 6% on both imports and exports. (The rate is, of course, about twice as high on goods enjoying preference, and higher still on many items.) The reduction in Imperial Preference since 1937 has been the result, first, of tariff changes, including those negotiated under G.A.T.T. and in other Trade Agreements, and secondly—probably more important—of the very large rise in prices which has reduced the *ad valorem* incidence of specific margins. The rise in prices has also brought about a substantial fall in percentage rates of protective duty, both on intra-Commonwealth trade and on similar goods imported from outside the Commonwealth.

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COMPARISONS BETWEEN INCREMENTS OF "UTILITY"

SINCE the publication of the Neumann–Morgenstern *Theory of Games* the concept of measurable "utility" has again come to the front of economic discussions, reviving the old controversy between the "cardinal" and the "ordinal" schools of thought. Recently Professor Robbins, in his review-article [1] on Sir Dennis Robertson's essay "Utility And All That," expressed his preference for the "ordinal" approach. He made, however, one reservation concerning comparisons of differences of "utility" and their ranking. The reservation referred to the proposition that "if we want, and are able, to say that a movement from A to B is rated more highly than a movement from B to C, then we are back in the world of cardinal magnitude. For it will then always be possible to find a point B between A and C such that the move from A to B is rated *just as* highly as the move from B to C, and that is really the same thing as saying that the interval A–C is *twice* the interval A–B." [2]

Professor Robbins points out that comparisons between preferences are being made by individuals and appear quite consistent with the "ordinal" approach, and that the example given by Sir Dennis implies only a judgment of equivalence but not a possibility of addition. If, on the other hand, such far-reaching restrictions were to be implied in the "ordinal" approach that comparisons between preferences would be interpreted as an implicit acceptance of "cardinal" measurement, then he would feel obliged to change camp and join the "cardinal" school.[3]

It may be more useful to discuss the problem in terms of different degrees of measurability rather than on the basis of the distinction between the "ordinal" and "cardinal" approach. In this connection a paper published recently by Professor A. A. Alchian in the *American Economic Review* [4] is particularly helpful.

[1] Lionel Robbins, "Robertson on Utility and Scope," *Economica*, May 1953.

[2] D. H. Robertson, *Utility and All That*, p. 18.

[3] Lionel Robbins, *op. cit.*, p. 104.

[4] A. A. Alchian, "The Meaning of Utility Measurement," *American Economic Review*, March 1953. While the main purpose of the article is the explanation and appraisal of the contribution made to economics by the Neumann–Morgenstern hypothesis, the author also attempts a systematic classification of the aims and methods of measurement relevant to the concept of "utility." In this note the general propositions concerning the different types of measurement are essentially based on that analysis.

In this note a restatement of the problem posed by Professor Robbins in terms of degrees of measurability will be attempted, and some conclusions drawn on the comparisons between differences of "utility."

The following general propositions with reference to "utility" measurement appear to have been established:

1. Ordinal comparisons can be conceived as the freest, or the least unique, method of measurement; the assigning of figures to the entities compared requires here for consistency only the same ranking of numbers as between the various measurements. In other words, we can assign numbers to the objects or situations compared in an arbitrary way subject to one important restriction that increments between the same entities have always the same sign. If A is preferred to B, it must correspond to a greater number, whatever the set of numbers chosen for measurement. It follows that "marginal utility" does not really disappear, but it is a concept which has only a sign (positive or negative) and no numerical value whatsoever, and it is impossible to say whether it is diminishing, increasing or constant. In technical language we can say that this method implies the measurement of "utility" up to a monotonic transformation only.

2. A more precise method of measurement is one which enables us to devise measures which are identical up to a linear transformation. The choice of zero and of the unit of measurement is arbitrary, but once we have assigned numbers to two objects or situations, then only unique numbers can be assigned to the other objects or situations compared. So far the measuring of "utility" up to this degree of precision has proved theoretically possible only in the case of choices involving uncertainty, and even this requires the rather artificial and not widely accepted assumption that when faced with uncertain prospects men are guided, as a rule, by mathematical expectations based on the calculus of probability, and any satisfaction or dissatisfaction from risk-taking as such is of no major consequence.[1] The essential property of measurability up to a linear transformation is that each set of measures can be obtained from any other on the basis of an equation of the type $y = ax + b$. This implies the pos-

[1] In addition there is also the controversial issue of the importance of choices involving risk in actual experience. For completely opposed views on the subject cf. I. M. D. Little, *Critique of Welfare Economics*, pp. 31–2, and A. A. Alchian, *op. cit.*, p. 34.

sibility of making quantitative comparisons *between the increments* within a series of measurements; we can say, for instance, that the increment from A to B is twice as great as the increment from B to C, for this will be true, irrespective of the scale used (*i.e.*, although both the zero and the unit of measurement may differ). But we would still be unable to make consistent statements about the ratios in which the numerical values of *the entities themselves* are related to one another, and we would not be able to compare sums of entities on the basis of measurements of the individual entities constituting such a sum. In this sense the individual measurements *are not additive*, for the sums obtained by adding measurements based on two measures identical up to linear transformation only, will yield totals which are not equivalent. Perhaps the clearest illustration of such measures is provided by the different scales for measuring temperature commonly used in different parts of the world at present. As between the Fahrenheit and the Celsius (centigrade) systems, for instance, both the zero and the unit of measurement differ. While it is correct to say that the temperature rose twice as much between one pair of dates as between another, it is meaningless to say that the temperature itself was twice as high to-day as yesterday. In the former case the same result will be obtained whether we use the Centigrade or the Fahrenheit scale, but in the latter instance the results will differ.[1] It is also meaningless to compute sums of measurements of temperatures, for (apart from any consideration of purpose) the results would differ according to the scale chosen.[2] Transferring the argument to the field of "utility," measurability up to linear transformation would enable us to find the sign of *marginal* utility and the rate of its change, but it would not entitle us to estimate the "utility" of a group of objects (or situations) by adding the "utilities" assigned to the individual objects (or situations) composing such groups (and this irrespective of the complications created by complementarity and other forms of interdependence).

[1] While the equivalent of a sum $x_1 + x_2$ in terms of another scale will be $a(x_1 + x_2) + b$, the sum of the corresponding equivalents of the individual measurements will be $a(x_1 + x_2) + 2b$.

[2] The equivalents of 25° C. and 50° C. are respectively 77° F. and 122° F. but five increments of 10° C. will correspond to five increments of 18° F. While ratios between measurements depend on absolute values (*i.e.*, on the zero of the scale), the size of the increments depends only on the slope (or the "shape") of a straight line or curve.

3. Only measures which are unique up to a multiplicative constant enable us to compute ratios between the numerical values assigned to individual entities (and not merely between the differences in such numerical values). Moreover, provided the entities grouped together are independent with respect to the characteristic measured, it is possible to make comparisons between such groups on the basis of computing sums of the numerical values of the individual entities.[1] This is a special case of linear transformations where each measure differs by a simple conversion factor and one can be obtained from another by means of multiplication by a constant. This is the familiar field of weights and lengths and derived concepts such as yield per acre. If " utility " were measurable up to linear transformation, this would be sufficient for ranking groups of *alternative* objects (*i.e.*, *A or B*, *D or C* . . .) on the basis of sums of individual " utilities " weighted by probabilities.[2] For aggregates of objects, of the type *A plus B plus C* . . . , however, not only the postulate of independence would have to be fulfilled, but also a more precise degree of measurability, *i.e.*, up to a multiplicative constant, would have to be devised in order to move simply by the process of addition from comparisons between individual entities to comparisons between groups.

It seems that on the basis of the above reasoning the following conclusions can be drawn with reference to the problem stated at the beginning of this note. First, comparisons between differences, or increments, in " utility " imply that the sign of increments can be uniquely determined, and fall under our second category of measurability, *i.e.*, measurement unique up to a linear transformation. In contrast to " ordinal " comparisons between the entities themselves, which do not entitle us to any further quantitative judgments, consistent " *ranking* " *of increments* involves the knowledge of the " shape " of the functional relations concerned,

[1] To see that this will not be possible for measures unique up to linear transformation only, one can, for the sake of illustration, consider the contradictory results obtained by comparing the sums $(A + B + C)$ and $(D + E)$ by using the Centigrade and the Fahrenheit scales respectively, where $A = 10°$ C. $= 50°$ F.; $B = 20°$ C. $= 68°$ F.; $C = 35°$ C. $= 95°$ F.; $D = 30°$ C. $= 86°$ F.; and $E = 40°$ C. $= 104°$ F.

[2] For " utilities " of uncertain prospects the basic equation is $U(A \text{ or } B) = pU(A) + (1 - p)U(B)$. This will always be true for any linear transformation, whatever the zero and the unit of measurement chosen, for $apx_1 + a(1 - p)x_2 + b$ equals $p(ax_1 + b) + (1 - p)(ax_2 + b)$.

and enables us to compute their sums and ratios. Such comparisons are beyond the scope of the strictly " ordinal " approach, which is characterised by our first category of measurability, *i.e.*, unique up to a monotonic transformation only.

On the other hand, judgments of equivalence clearly do not imply *per se* the possibility of addition. In particular, a judgment of equivalence, or indifference, between two entitities A and B signifies only the possibility of " measurement " up to a monotonic transformation, *i.e.*, our first category of measurability, while the possibility of adding utilities of A and B and computing the ratio of the sum to the utilities of the individual entities implies the independence of utility of A from utility of B and the possibility of measurement up to a multiplicative constant, *i.e.*, our third degree of measurability.

Finally, there is no doubt that comparisons between preferences, as, for instance, in the example given by Professor Robbins with reference to works of art,[1] are a common experience. From such comparisons of a purely " ordinal " nature of *differences of " utility "* between pairs of different objects there is hardly any further step required in order to make the same comparisons between increments of " utility " from successive additions of the same commodity,[2] which leads us straight, provided such preferences between increments are consistent, into the realm of diminishing marginal utility. In principle, once differences between preferences can be consistently ordered, " utility " becomes measurable up to a linear transformation. There are, however, two qualifications. While our preferences between actual entities may well be consistent, it is quite possible that no consistent ranking of preferences themselves (*i.e.*, of differences or increments of " utility ") by individuals can be assumed even as a broad approximation. Moreover, even if a certain general consistency of such judgments by individuals existed, these comparisons of preferences may never be sufficiently precise as to enable an individual to say, on the basis of all indirect comparisons feasible, that his preference of A over B is twice as high as his preference of C over D. Nevertheless, he could be quite consistent in his statements about his degrees of preference with respect to a number of important choices.

It is beyond the scope of this note to discuss whether any

[1] Cf. *op. cit.*, p. 104.

[2] If one can say that one's preference for 2 lb. of tea over 3 lb. of coffee is greater than one's preference for 2 lb. of cocoa over 1 lb. of chocolate, one can also say that one values the fifth packet of cigarettes less than the fourth.

generalisations could be made about the marginal " utility " of income by a more direct and less controversial method than by means of comparisons of choices involving uncertainty. It seems clear, however, that this is a problem more important for the theory of welfare economics than for the theory of value.

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THE TRANSFER PROBLEM AND TRANSPORT COSTS, II: ANALYSIS OF EFFECTS OF TRADE IMPEDIMENTS

I. Introduction

The first part of this paper [1]

(1) surveyed the theoretical literature;

(2) developed graphically and logically for the transport-free two-country two-good case a fundamental criterion to determine how the terms of trade of the paying country change;

(3) showed that the criterion involves marginal *income* propensities of the different countries and goods in an essentially *symmetric* way, so that *in the complete absence of all trade impediments absolutely no probability presumptions concerning the criterion or the terms-of-trade change were possible;*

(4) argued that the usual defense of the orthodox view appeals to empirical elements premised on transport costs in order to be able to get a definite answer from a criterion whose validity and applicability had been derived on the explicit banishment of all transport costs.

These results do not—and were not intended to—demolish the orthodox doctrine of a presumption that unilateral transfer payments will tend to deteriorate the terms of trade of the paying country. But they do suggest that the orthodox doctrine is still in need of vindication and further examination.

The present paper: (1) introduces transport costs explicitly into the Jevons–Pigou barter model to analyse the probable effects of transfer, and (2) discusses briefly some other aspects of impediments to trade.

II. Equilibrium Conditions

As in Part I, Europe and America consume clothing and food. Because Europe is relatively well endowed with clothing (or clothing-producing factors), she exports clothing for American

[1] P. A. Samuelson, "The Transfer Problem and Transport Costs: The Terms of Trade When Impediments are Absent," Economic Journal, Vol. LXII (June 1952), pp. 278–304, hereafter referred to as Part I. Certain extensions to the many-good case were also made.

food. The price ratio in Europe's markets of clothing to food represents her net terms of trade, and must in equilibrium equal Europe's indifference-ratio or relative marginal utilities of the goods. A similar equilibrium condition will hold for the price ratio in the American market and America's indifference ratio. If there are zero transport costs, these price ratios will be identical even though an ocean intervenes.

With no unilateral payments, trade must balance. For each country, value of imports = value of exports, expressed in common units. These units may be dollars, francs, ergs, food units or clothing units. There is no need to write a separate balance equation for each country, since the exports of Europe are the imports of America and vice versa.

Now we admit a unilateral payment from Europe to America. The common balance equation of the countries becomes

Value of American imports = value of American exports + value of unilateral payment

or

Value of Europe imports = value of Europe exports − value of unilateral payment

Part I and Pigou's earlier discussion showed that it matters little for our model in what units the unilateral payment is prescribed. Readers seem to find it most natural to imagine that Europe's unilateral payment to America is initially prescribed in terms of Europe's own export good—clothing in my example. Let then the payment be K clothing units per unit of time. So long as clothing and food prices, P_c and P_f, are the same in both countries, we may rewrite the balance of payments

$$P_f \text{ (American Food Exports)} = P_c \text{ (European Clothing Imports)} - P_cK$$

or using Pigou's notation of X for the receiving country's export and Y for the paying country's export, we get

$$\frac{P_c}{P_f} = \frac{X}{Y - K} \tag{1}$$

as an expression for Europe's net terms of trade. (Without the K units of clothing payments, we would have Taussig's gross barter terms of trade; and if $K = 0$, the two concepts are identical.)

All this is familiar ground. If we write down our demand or

marginal utility conditions, the full equilibrium conditions are summarised by

$$(2)\quad \left(\frac{\text{M.U. of Clothing}}{\text{M.U. of Food}}\right)_{\text{America}} = \frac{P_c}{P_f} = \frac{X}{Y-K} = \left(\frac{\text{M.U. of Clothing}}{\text{M.U. of food}}\right)_{\text{Europe}}$$

where the marginal utility or indifference ratios depend upon consumption in the respective countries—and hence, with production determined, on the export variables X and Y alone.[1]

The three equations of (2) are sufficient to determine the three unknowns: X, Y, P_c/P_f. If we change K—say from 0 to +100—new equilibrium values of the unknowns are determined. How the price ratio changes was shown to depend on the relative slopes of the Engel or income–consumption curves of the two countries (*i.e.*, upon the derivatives of their relative-marginal-utility functions).

III. A Numerical Example of Cost-free Transfer

The following concrete example will pave the way for our further explorations. Suppose Europe produces 0 food and 200 clothing, America produces 0 clothing and 200 food. Suppose with Pigou that for each consumer utilities are measurable and independent. For simplicity, let each good have a strictly linear marginal utility, and for both America and Europe let the same linear formulas apply: M.U. $= 8 - 0{\cdot}04$ (consumption), applying to both food and clothing.

Remember that each country consumes of its import good exactly what it imports, and of its export good what is left over from its production after exporting. Thus (2) now becomes the specific equation

Case of no transfer, $K = 0$:

$$\frac{8 - 0{\cdot}04Y}{8 - 0{\cdot}04(200 - X)} = \frac{X}{Y - 0} = \frac{8 - 0{\cdot}04(200 - Y)}{8 - 0{\cdot}04X} = \frac{P_c}{P_f}$$

[1] In *Public Finance*, p. 179, Pigou writes (2) in the form

$$\frac{\phi(Y)}{f(X)} = \frac{X}{Y - K} = \frac{\psi(Y)}{F(X)}$$

Because he usually expresses Europe's payment in terms of the receiving country's good, he usually (see p. 176) writes instead of $X/(Y - K)$ the equivalent expression $(X + R)/Y$, where R is Europe's payment expressed in physical units of America's export product. I have set the number of representative individuals equal to one in each country and have omitted Pigou's m and n.

Case of transfer, $K = +100$:

$$\frac{8 - \mathbf{0{\cdot}04}Y}{8 - \mathbf{0{\cdot}04}(200 - X)} = \frac{X}{Y - 100} = \frac{8 - \mathbf{0{\cdot}04}(200 - Y)}{8 - \mathbf{0{\cdot}04}X} = \frac{P_c}{P_f}$$

By cross multiplication, each of these sets of equations can be combined into quadratic expressions in X and Y. Eliminating one variable, we are left with a 4th-degree equation in the other that can be solved for its relevant root. Actually, as the reader can verify by quick substitution, the solution to the first case is given by :

$$\text{Before transfer : } \frac{P_c}{P_f} = 1,\ X = 100,\ Y = 100$$

which is not surprising in view of the assumed symmetry of the relations.

The transfer case can also be solved without setting up 4th-degree equations. The bold-face coefficients in the equations give us the criterion [1] $0{\cdot}04/0{\cdot}04 = 0{\cdot}04/0{\cdot}04$, so we know that the net terms of trade will be unaffected. Knowledge of $P_c/P_f = 1$ gives us three linear relations between X and Y, permitting us to solve by inspection :

$$\text{After transfer : } \frac{P_c}{P_f} = 1,\ X = 150,\ Y = 50.$$

After transfer—which means with a unilateral payment being currently made and remade!—the receiving country consumes more of both goods, importing more clothing and retaining at home more food. The payer consumes less of both goods, exporting more of her clothing production and importing less food. Although the unilateral payment was prescribed in terms of clothing, the actual transfer has taken place as much in the form of curtailed food imports as in expanded clothing exports. (See Table I for a numerical summary.)

The terms of trade are unchanged because the income–consumption curve of America just happens to coincide with the income–consumption curve of Europe.[2] Before and after transfer, the two countries divide their incomes in the same way between the two goods. This is a highly unrealistic case, but I refer the reader to the earlier discussion as to why there can be

[1] This is Pigou's $|\psi'/F'| = |\phi'/f'|$, proportional to my $C_A/F_A = C_E/F_E$. See ECONOMIC JOURNAL 1952, p. 286.

[2] In Part I's graphical terms, here the contract curve coincides with the two income–consumption curves, which for the linear Pigou model are straight lines. See Fig. 1 below for a scale drawing of the case.

TABLE I

Zero Transport Costs and Transfer

	Before transfer $K = 0$.	After transfer $K = +100$ from Europe to America.
Terms of trade of clothing to food .	1·00	1·00
Europe :		
Terms of trade of clothing to food	1·00	1·00
Clothing—		
Production	200	200
Consumption	100	50
Exports (+) or imports (−) .	+100	+150
Food—		
Production	0	0
Consumption	100	50
Exports (+) or imports (−) .	−100	−50
America :		
Terms of trade of clothing to food	1·00	1·00
Clothing—		
Production	0	0
Consumption	100	150
Exports (+) or imports (−) .	−100	−150
Food—		
Production	200	200
Consumption	100	150
Exports (+) or imports (−) .	+100	+50

no systematic presumption about relative expenditure if we adhere pedantically to the strait-jacket of literally zero cost-impediments to trade.

IV. EXPLICIT INTRODUCTION OF REAL TRANSPORT COSTS

I now propose to come directly to grips with transport costs. The simplest assumption is the following : To carry each good across the ocean you must pay some of the good itself. Rather than set up elaborate models of a merchant marine, invisible items, etc., we can achieve our purpose by assuming that just as only a fraction of ice exported reaches its destination as unmelted ice, so will a_x and a_y be the fractions of exports X and Y that respectively reach the other country as imports. Of course, $a_x < 1$ and $a_y < 1$, except in the costless model, where they were each unity.

With transport costs in the picture, we must distinguish between price ratios in the two countries and also between the numerical exports of one country and the numerical imports of the other. America's clothing imports are now less than Europe's clothing exports Y, being instead $a_y Y$. Similarly, Europe's food imports are now $a_x X$ rather than X.

The balance of payments for either country can most simply be written using her *domestic* price ratios and her exports and imports. Thus, for America

$$\left(\frac{P_c}{P_f}\right)_A \text{ clothing imports} = \text{food exports}$$

all transfers being provisionally assumed away. Or

$$\left(\frac{P_c}{P_f}\right)_A = \frac{X}{a_y Y}$$

For Europe

$$\left(\frac{P_c}{P_f}\right)_E \text{ clothing exports} = \text{food imports}$$

Or

$$\left(\frac{P_c}{P_f}\right)_E = \frac{a_x X}{Y}$$

These two relations enable us to deduce the discrepancy between the two price ratios that transport costs must create and maintain. So long as goods are flowing in both directions

$$(3) \quad \left(\frac{P_c}{P_f}\right)_E = a_x \frac{X}{Y} = a_x a_y \frac{X}{a_y Y} = a_x a_y \left(\frac{P_c}{P_f}\right)_A < \left(\frac{P_c}{P_f}\right)_A$$

Interpretation: goods are relatively cheapest in their place of origin for two reasons—there is a transport cost saved on the export good and a transport cost paid on the import good. Thus, if clothing were to cost $\frac{1}{4}$ of itself to transport west and food to cost $\frac{1}{3}$ of itself to transport east, the European price ratios of clothing to food would be $\frac{2}{3}$ of $\frac{3}{4}$ or $\frac{6}{12}$ of the American price ratio. The reader can verify that the American price ratio of food to clothing will be cheaper than the European for the same reason and *by the same numerical factor* of $\frac{6}{12}$; *i.e.*, symmetrically with (3), we have

$$\left(\frac{P_f}{P_c}\right)_A = a_x a_y \left(\frac{P_f}{P_c}\right)_E < \left(\frac{P_f}{P_c}\right)_E$$

These fundamental price relations were derived from comparing balances of payments. A more fundamental derivation would be via arbitrage relations that maintain "purchasing-power parity" relations among transportable goods. One unit of cloth is worth $(P_f/P_c)_E$ units of food in Europe. By sending it abroad we can buy $a_y(P_f/P_c)_A$ units of food in America, of which $a_x a_y(P_f/P_c)_A$ can be brought back to Europe. This last expression must not exceed $(P_f/P_c)_E$, or arbitrage will set in, restoring the equality. Q.E.D. If transport costs are great

enough to make all trade unprofitable, then the equality [1] of (3) is to be replaced by $(P_f/P_c)_A > a_x a_y (P_f/P_c)_E$ and $(P_c/P_f)_E > a_x a_y (P_c/P_f)_A$, with similar inequalities holding in terms of opposite directional transport costs.

How shall we measure *the* terms of trade between clothing and food? By Europe's price ratio, $(P_c/P_f)_E$? Or by America's $(P_c/P_f)_A$? So long as the spatial markets remain connected by trade, these measures differ only by an invariant scale factor, $a_x a_y$.[2] Therefore, transfer payments and any other disturbance will affect either measure in the same direction and relative degree. So we can use either as our measure of the terms of trade. Or for that matter, we can define a more symmetrical in-between measure, $(P_c/P_f)_I = a_y(P_c/P_f)_A = (P_c/P_f)_E/a_x$. This intermediate measure, which differs only in scale from the local measures, will be found to be a convenient variable for later use.

Now to combine our elements into a determinate trade equilibrium taking account of transport costs. Assuming no transfer payments, for America

$$\left(\frac{\text{M.U. clothing consumed}}{\text{M.U. food consumed}}\right)_A = \left(\frac{P_c}{P_f}\right)_A = \frac{\text{food exports}}{\text{clothing imports}} = \frac{X}{a_y Y}$$

for Europe

$$\left(\frac{\text{M.U. clothing consumed}}{\text{M.U. food consumed}}\right)_E = \left(\frac{P_c}{P_f}\right)_E = \frac{\text{food imports}}{\text{clothing exports}} = \frac{a_x X}{Y}$$

where in every case, imports are derived by applying the transport-cost a coefficient to our old symbols for exports.

These equations can be conveniently combined

$$a_y\left(\frac{\text{M.U. clothing consumed}}{\text{M.U. food consumed}}\right)_A = \frac{X}{Y} =$$
$$\frac{1}{a_x}\left(\frac{\text{M.U. clothing consumed}}{\text{M.U. food consumed}}\right)_E = \left(\frac{P_c}{P_f}\right)_I = a_y\left(\frac{P_c}{P_f}\right)_A = \frac{1}{a_x}\left(\frac{P_c}{P_f}\right)_E$$

Note that the relative marginal utility expressions for each country are determinate functions of food and clothing consumed; call this function r (clothing, food) for America and R (clothing, food) for Europe, where these functions have the usual curvature properties of marginal rates of substitution. With America producing O clothing and F food, and Europe O food and C

[1] See P. A. Samuelson, "Spatial Price Equilibrium and Linear Programming," *A.E.R.*, Vol. XLII (June 1952), pp. 283–303, for a discussion of some of these spatial price relations.

[2] If transport costs varied with volume of trade, the as would not be constants. Realistically, since there are joint costs of a round trip, a_x and a_y will tend to move in opposite directions, depending upon the strengths of demands for east and west transport.

clothing, we can express these demand functions in terms of exports alone: namely, $r(a_yY, \bar{F} - X)$ and $R(\bar{C} - Y, a_xX)$.

To take account of a transfer payment from Europe to America, recall that this is stipulated in terms of Europe's export good. But is it to be so much clothing *in Europe*, or does the stipulated amount refer to clothing *delivered* in America? With transport costs, there is a difference. It is of no consequence which convention we adopt: a smaller stipulated amount of delivered clothing will be identical in its effects to a large stipulated amount of clothing paid in Europe itself.

For convenience, I shall let the stipulated unilateral payment K stand for clothing payable in Europe to America. In Europe's balance of payments, K will be seen to be a direct subtraction from its clothing export credit items, Y—exactly as in the transport-free case.

Hence, we can write down our final equilibrium system, including all previous ones as special cases.[1]

$$(4)\quad a_y r(a_yY, \bar{F} - X) = \frac{X}{Y - K} = \frac{1}{a_x} R(\bar{C} - Y, a_xX) = \left(\frac{P_c}{P_f}\right)_I = a_y\left(\frac{P_c}{P_f}\right)_A = \frac{1}{a_x}\left(\frac{P_c}{P_f}\right)_E$$

With the parameters a_x, a_y, $\bar{C}$, $\bar{F}$ specified, we can vary the payment K and determine the resulting shift in the terms of trade.

V. Example of Real Transport Costs and Transfer

Our previous numerical example can provide a good illustration of some properties of our new system. We leave tastes and production as before. To bring out strongly the effect of transport changes, set $a_x = 0{\cdot}5 = a_y$, so that fully one-half of each good is used up in crossing the ocean. Substituting into the linear marginal utility relations $8 - 0{\cdot}04$ (consumption), gives

$$\frac{a_y(8 - 0{\cdot}04a_yY)}{8 - 0{\cdot}04(200 - X)} = \frac{X}{Y - K} = \frac{8 - 0{\cdot}04(200 - Y)}{a_x(8 - 0{\cdot}04a_xX)} = \left(\frac{P_c}{P_f}\right)_I$$

or

[1] With $a_x = 1 = a_y$, we have the transport-free case; with $K = 0$, we have no transfer. In the case of independent utilities, this may be written in Pigou's notation as

$$(4)'\qquad \frac{a_y\phi(a_yY)}{f(X)} = \frac{X}{X - K} = \frac{\psi(X)}{a_xF(a_xX)}$$

which differs from his original equations only because of the a_x and a_y coefficients.

$$(5)\quad \frac{4-\frac{0{\cdot}04}{(2)(2)}Y}{8-0{\cdot}04(200-X)}=\frac{X}{Y-K}=\frac{8-0{\cdot}04(200-Y)}{4-\frac{0{\cdot}04}{(2)(2)}X}=$$

$$\left(\frac{P_c}{P_f}\right)_I=\frac{1}{2}\left(\frac{P_c}{P_f}\right)_A=2\left(\frac{P_c}{P_f}\right)_E$$

Before transfer, we solve these equations with $K = 0$. From the symmetry of the problem, it is easy to guess $X = Y$, $(P_c/P_f)_I = 1$. It is then easy to deduce that the common value of exports is $X = 80 = Y$, with imports being only half as great because of transport costs. See Table II for a summary of the

TABLE II

Real Transport Costs and Transfer

($a_x = 0{\cdot}5 = a_y$)

	Before transfer $K = 0$.	After transfer $K = +100$ from Europe to America.
Intermediate terms of trade of clothing to food	1·00	1·48
Europe :		
Terms of trade of clothing to food	0·50	0·74
Clothing—		
Production	200	200
Consumption	120	69·2
Exports (+) or imports (−) .	+80	+130·8
Food—		
Production	0	0
Consumption	40	22·75
Exports (+) or imports (−) .	−40	−22·75
America :		
Terms of trade of clothing to food	2·0	2·96
Clothing—		
Production	0	0
Consumption	40	65·4
Exports (+) or imports (−) .	−40	−65·4
Food—		
Production	200	200
Consumption	120	154·5
Exports (+) or imports (−) .	+80	+45·5

results. In America food consumption is 120 and clothing only 40. In Europe food consumption only 40 and clothing 120. As Pigou, Robertson and others have insisted all along, one's home produce is relatively cheap and one buys relatively more of it in physical terms. Actually $(P_c/P_f)_E = 0{\cdot}5$ and $(P_c/P_f)_A = 2{\cdot}0$, so there is a four-fold difference in price.

What is not inevitable outside this particular model is the fact that each country spends relatively more money on its own

good than on the imported good. Before transport costs were introduced, America spent 50% of its income on food and 50% on clothing. With heavy transport costs, clothing imports have become twice as expensive as food; but such is elasticity of demand that physical clothing consumption has dropped off by more than half—from 100 to 40. And more of food production is retained for home consumption because of the transport barrier to exports. So America ends up spending 60% of its income on its own good, food. A similar story holds for Europe's export and import goods.

Now introduce a unilateral payment of $K = +100$ clothing units payable in Europe to America. Table II shows the resulting pattern of trade and the resulting shift of the terms of trade in favor of the paying country.[1] This 48% shift in favor of Europe is a direct and dramatic reversal of the orthodox expectation that the payer's net terms of trade should deteriorate.

Such a perverse result is not coincidental. If we adhere rigidly to the strictest Pigouvion model of (*a*) identical unchanging tastes, (*b*) independent marginal utilities and (*c*) strictly linear marginal utilities, an anti-orthodox result is inevitable.[2] That further analysis of the orthodox view is needed must be apparent from this discussion.

VI. Equilibrium with Artificial Tariff Impediments

So far we have confined attention to "real" trade impediments that literally use up resources in transporting goods. The almost as important case of artificial impediments such as tariffs or quotas has certain analytic similarities. But there are important differences, which must not be glossed over, and which require separate analysis and conclusions.

For simplicity of exposition suppose that all Custom duties are levied in terms of the imported goods themselves: thus an importer who brings a unit of clothing into America from outside finds that the government leaves him with only $a_y < 1$ units of

[1] To solve equations (5) for $K = +100$, no short cuts are possible. Rather than solve a quartic equation, I used trial-and-error iterations; the interested reader can substitute Table II values for X and Y into (5) and verify that the resulting ratios do agree to the indicated number of decimal places.

[2] The general mathematical reasons for this are given later. At this stage any reader can examine the bold-faced coefficients, which in the zero transport cost case yield $0{\cdot}04/0{\cdot}04 = 0{\cdot}04/0{\cdot}04$, a criterion for no change in the terms of trade. He can compare these with the bold-face coefficients, which in the real impediment case where $a_x = 1/2 = a_y$, gives as a criterion for an *improvement* in the payer's terms of trade, $0{\cdot}04/(0{\cdot}04/2^2) > (0{\cdot}04/2^2)/0{\cdot}04$.

clothing after he has passed through Customs; similarly, a European importer of food is left with but a_x units of food after he has paid the duty on a unit of imports.

Now as far as arbitragers are concerned, they do not care whether the impediments to trade are " natural " or " contrived." Clearly purchasing power parity relations between the spatial prices will be exactly the same as in the case of real transport costs. *I.e.*, so long as duties are not prohibitively high and goods are actually flowing in both directions, equilibrium requires

$$(3)' \quad \left(\frac{P_c}{P_f}\right)_E = a_y a_x \left(\frac{P_c}{P_f}\right)_A < a_y \left(\frac{P_c}{P_f}\right)_A = \left(\frac{P_c}{P_f}\right)_I < \left(\frac{P_c}{P_f}\right)_A$$

This is the exact equivalent of equation (3), which showed the degree to which a country's own export good is relatively cheap at its place of origin.

Tariffs affect our balance-of-payments expressions quite differently from real transport costs. No matter how Custom officials alter the price tags of goods, the physical imports of each country are still fully equal to the physical exports of the other country. Tariffs do not literally *use up* goods as do transport costs. Our convention that governments collect duties in kind brings into prominence the problem that always vexes the theorist dealing with tariffs : What does the government do with the tariff receipts? The usual convention followed is the one that is most natural for me to adopt here : The government is assumed to distribute the receipts to the (representative) consumer in a *lump-sum* fashion so that each consumer can act as if the true price to him for any expansion of purchase is equal to the price quoted within his country's markets.[1]

The balance of payments of America, or for a typical American consumer, can be written in either of the following ways when transfer payments are zero

Imports valued just outside of America =
exports valued just outside of America

Imports valued inside America =
exports valued in America + Lump-sum Tariff Rebate

[1] The case of quotas does not directly give us a_x and a_y coefficients, but for any degree of import limitation these can be defined implicitly as the ratio of the price the importer must pay to the higher price that competition produces internally. By auctioning the limited quotas, the government can collect the difference and give it to whomever it deems worthy. More often, the difference is pocketed by importers, and for simplicity their tastes and demands are assumed to be like that of the populace at large. The same assumption was implicitly made about the government's disposition of the transfer payment.

Applying similar reasoning to Europe, and using our symbols, we get

$$\left(\frac{P_c}{P_f}\right)_I Y = X \tag{6}$$

and

$$\left(\frac{P_c}{P_f}\right)_A Y = X + \left\{\left(\frac{P_c}{P_f}\right)_A - \left(\frac{P_c}{P_f}\right)_I\right\} Y$$

Similarly, for Europe

$$\left(\frac{P_f}{P_c}\right)_E X = Y + \left\{\left(\frac{P_f}{P_c}\right)_E - \left(\frac{P_f}{P_c}\right)_I\right\} X$$

where the terms involving brackets represent the lump-sum rebates of tariff receipts.

Of these relations, we need only (6). To take account of transfer payments expressed in terms of the export good of the paying country, the specified place of delivery is no longer of substance. In all of our balance-of-payments relations, the transfer of K units of clothing must be regarded as a subtraction from Europe's credit items of exports, and so we simply rewrite (6) in the more general form

$$\left(\frac{P_c}{P_f}\right)_I = \frac{X}{Y - K} \tag{6}'$$

Recalling that the representative consumer in each country equates his indifference-ratio or relative marginal utility to the domestic price ratio he faces, we can combine this fact with (3)′ and (6)′ to get our final conditions of equilibrium under tariffs :

$$(7)\quad a_y r(Y, \bar{F} - X) = \frac{X}{Y - K} = \frac{1}{a_x} R(\bar{C} - Y, X) = \left(\frac{P_c}{P_f}\right)_I = a_y \left(\frac{P_c}{P_f}\right)_A = \frac{1}{a_x}\left(\frac{P_c}{P_f}\right)_E$$

This should be compared with (2), the Jevons–Pigou equilibrium condition with no trade impediments and with (4), the equilibrium conditions with real as distinct from artificial trade impediments. Note that the a_y and a_x factors appear in (7) outside the r and R indifference functions exactly as they do in (4). But they do not appear inside the indifference functions because there is no literal using up of goods in transport.

The substantive difference between equilibrium conditions under artificial and real impediments described above is ignored in the following type of arguments. To the view that if the foreigner passes restrictive tariffs we should do the same, the

analogy is brought forward: "If Nature silted harbors abroad, would you think it necessary or desirable to ruin your own harbors?" For polemical purposes and with non-specialists, this is a suitable argument to use. But to a pedantical specialist, there is a difference between the kinds of trade obstructions that needs to be analysed at least once.

VII. Example of Transfer with Artificial Impediments

Using the numerical marginal utility functions of our previous examples, (7) takes the form

$$(7)' \quad \frac{4-\frac{0.04}{2}Y}{8-0.04(200-X)}=\frac{X}{Y-K}=\frac{8-0.04(200-Y)}{4-\frac{0.04}{2}X}=\left(\frac{P_c}{P_f}\right)_I$$

Table III summarises the results where $K = 0$ and no transfer payment is made and where $K = +100$, representing a unilateral payment from Europe to America of clothing. The case of $K = 0$ is easily solved when we note the symmetry of our

Table III

Artificial Impediments and Transfer

($a_x = 0.5 = a_y$)

	Before transfer $K = 0$.	After transfer $K = +100$ from Europe to America.
Intermediate terms of trade of clothing to food	1·00	1·40
Europe:		
Terms of trade of clothing to food	0·50	0·70
Clothing—		
Production	200	200
Consumption	133⅓	79·7
Exports (+) or imports (−)	+66⅔	+120·3
Food—		
Production	0	0
Consumption	66⅔	28·4
Exports (+) or imports (−)	−66⅔	−28·4
America:		
Terms of trade of clothing to food	2·0	2·80
Clothing—		
Production	0	0
Consumption	66⅔	120·3
Exports (+) or imports (−)	−66⅔	−120·3
Food—		
Production	200	200
Consumption	133⅓	171·6
Exports (+) or imports (−)	+66⅔	+28·4

numerical assumptions. This tells us X and Y must be equal. Hence $(P_c/P_f)_I = 1$, and we have merely to solve a linear equation for $X = 66\frac{2}{3} = Y$.

Introducing a transfer payment turns out to shift the terms of trade in favor of the paying country.[1] We expect this unorthodox result from our experience with Tables I and II: the artificial barrier case is intermediate, so to speak, between the zero-cost and real-cost cases. The terms of trade have not shifted so much in Europe's favor as in the previous example, but they have shifted in favor of the payer by 40%.

VIII. Graphic Solution of Tariff Case

Fig. 1 is an exact replica of Fig. 1 of the previous paper, but now the difference curves have been made to be concentric circles in accordance with the special numerical assumption of linear marginal utilities.[2] The dimensions of the box diagram are equal to total world production of the respective goods; Europe's origin is the lower left-hand corner of the box; America's origin is the upper right-hand corner. To approximate Jevons more nearly, I have placed the initial endowment point at the southeast corner of the box, marked A: this represents zero food production for Europe and zero clothing production for America, an extreme but inessential assumption.

With no impediments to trade, the offer curves through A will intersect at the equilibrium point B. Both the net and gross barter terms of trade are measured by the numerical slope of a line adjoining A to B. At B both countries' indifference curves are tangential, with their common tangent pointing at A; of course, B is on the contract curve of points of common tangency, which in this numerical case happens to be the straight-line diagonal joining the two origins.

A transfer payment of 100 clothing paid to America shifts the initial point from A to A'. New offer curves drawn through A' will intersect in a new equilibrium point, marked B'. With zero impediments, this new point must also be on the contract curve, where the nations' indifference curves are mutually tangential and pointing at the new initial point A'.

[1] With $K = +100$, I had to solve (7)′ by iterative trial and error: the reader can perform the substitutions to verify that the ratios of (7)′ are equal, up to the indicated number of decimal places.

[2] By changing commodity units, we could change the circles to ellipses. My choice of numerical coefficients is special in its symmetry between goods; also, it is an inessential coincidence that the world totals of production would, if given to either country, lead to its exact point of saturation.

For this special numerical case, the income-consumption or Engel's curves through B happen for both countries to have the same slope.[1] It follows from Part I's demonstration that $A'B'$ must then be parallel to AB, so that the unilateral transfer payment causes no orthodox deterioration of the payer's net terms of trade, and no anti-orthodox improvement.

All the above duplicates the reasoning of Part I, and depicts

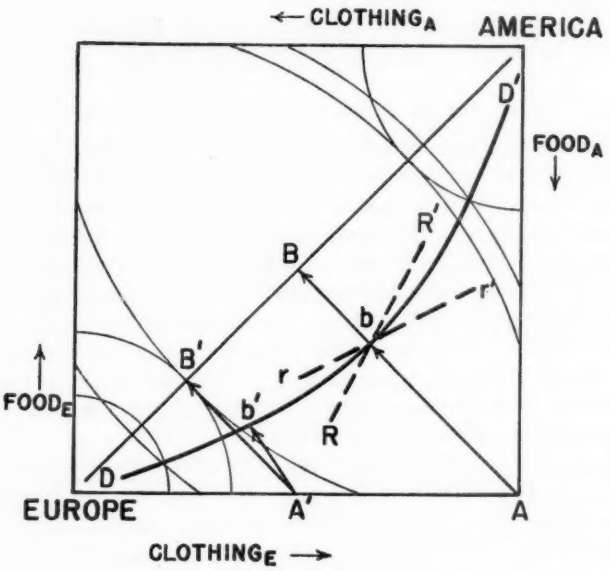

FIG. 1

With zero transport costs, transfer leaves terms of trade AB unchanged at $A'B'$. With tariffs, transfer improves payer's terms, from Ab to $A'b'$: along DD', where domestic prices differ by duties, indifference slopes steepen from b to b' because Pigou model makes Engel's slopes RR' steeper than rr'.

graphically the numerical data already given in Table I. To handle tariffs, we must recognise that the countries must end up—not with indifference-curve slopes equal as on the contract curve—but with Europe's final slope always in a constant ratio to America's. Why? To reflect the relative cheapness of each country's export good in its own market; *i.e.*, the slopes must differ by the constant factor, $a_x a_y < 1$.

[1] In the absence of transport costs and special information, Part I argued that we have no reason to presume either country's marginal income propensities will be dominant for either good.

The locus of points with indifference-curve slopes agreeing up to the specified numerical factor is given by DD'. All the final equilibria under tariffs must end up on this locus. Without transfer, the final equilibrium point is shown by Table II to be at b.[1] Graphically, this can be recognised by the fact that the intermediate slope at b, which is between the two countries' indifference slopes in the same degree as $(P_c/P_f)_I$ is intermediate between $(P_c/P_f)_A$ and $(P_c/P_f)_E$, points directly at b.

Just as transfer without tariffs moved us along the contract locus toward the payer's origin, so will transfer with tariffs move us along our new DD' locus from b to b', toward the payer's origin and away from the receiver's. The problem of what happens to the payer's net terms of trade can now be reworded in graphical terms :

> As transfer moves us along this DD' locus of final equilibrium points under tariffs, what is happening to the indifference slopes of either (and both, since the prices are in constant ratio to each other) country ? Are they becoming flatter, as in the orthodox view ? Or steeper ? Or remaining unchanged ?

Readers of Part I will easily see that the reasoning applied there to Fig. 2 can also be applied here. A comparison of the relative steepness of the two countries' income–consumption curves through any point on DD' tells us how the indifference-slopes are changing as we move along DD'.[2]

To summarise :

> The paying country's net terms of trade will, under tariffs, *improve* (*remain the same*, *deteriorate*), depending on whether its own product expands relative to the other product *more slowly* (*at the same rate*, *faster*) along its own income–consumption curve than it expands along the receiving country's income–consumption curve.[3]

[1] Geometrically, b could be defined by intersecting " offer curves," where the latter are newly defined so as to be generated—not by points on each country's indifference curves that are pointing directly at A—but by points that would be pointing at A after modification by the a_y and $1/a_x$ factors. After transfer shifts us from A to A', a similar argument can determine b'.

[2] See ECONOMIC JOURNAL 1952, p. 287, for the detailed reasoning.

[3] The relevant criterion depends on relative *physical* marginal propensities—*i.e.*, upon the relative slopes of the Engel's curves in the Figures—and can be written as $c_A/f_A \gtrless c_E/f_E$. Since the nations' price ratios differ, this is no longer equivalent to $C_A/F_A \gtrless C_E/F_E$, the criterion previously defined in terms of non-physical marginal income propensities. See ECONOMIC JOURNAL 1952, p. 286. Paradoxically, the latter criterion will turn out to be the correct one when the trade impediments are real rather than artificial, as will be shown in Table IV.

We now see why the anti-orthodox result occurred in this case. The strict Pigou case of independent and linear marginal utilities is seen graphically to imply income–consumption curves that become steeper as the indifference curves become flatter! *I.e.*, as a good becomes cheap, more of it is bought and its average propensity to consume increases; but its marginal income propensities—both physical and in terms of value—here move in the opposite direction. Thus, through b and b', Europe marginally contracts its purchase of America's product (relative to its own product) faster than America expands its purchase of its own product (relative to Europe's product). Note how Europe's Engel's curve RR' through b is in the Pigou model steeper than America's Engel's curve rr'. This causes the intermediate slope between the two indifference curves to steepen as transfer moves us down DD' from b to b'. (See Fig. 2 of Part I for expansion of this argument.)

IX. Orthodoxy Defended in the Tariff Case

Our analysis has no need for assumptions of independent or linear marginal utilities. And since they lead to bizarre results, the time has come to drop them. In Part I, I discussed at length the alternative convention that Viner and others have put forward. By use of the principle of sufficient reason or other argument, Viner assumes that the single best assumption in the presence of ignorance is the following: Average and marginal income propensities are equal, so that indifference curves should be drawn with income–consumption curves that fan out in straight-line spokes from the origin.

I shall not go through again my previous lengthy evaluation of this Basic Convention.[1] It is enough to show that our assuming it will restore the orthodox presumption in one of our three cases, namely in the present case of artificial tariff barriers. Fig. 2 provides a graphical demonstration. Every American indifference curve is simply a radial blow-up of any other. The same is true of Europe. Assuming tastes to be the same, a fair assumption by our earlier arguments, we would still have no change in net terms of trade until we introduce trade impediments.

But tariffs cause the final equilibrium to shift—not from B to B' along the diagonal contract curve—but from b to b' along the DD' locus of final equilibria with proper spatial price relationships. Obviously, the tariff has made imports dear and shifted

[1] See Economic Journal, 1952, pp. 295–8.

each country's physical consumption toward its own local goods. Europe's consumption is shifted south-eastward toward more clothing and less food; America's south-eastward toward more food and less clothing. We cannot tell whether a country spends a larger fraction of its income on imports or not. But that does not matter! We do know that in this case as a nation buys

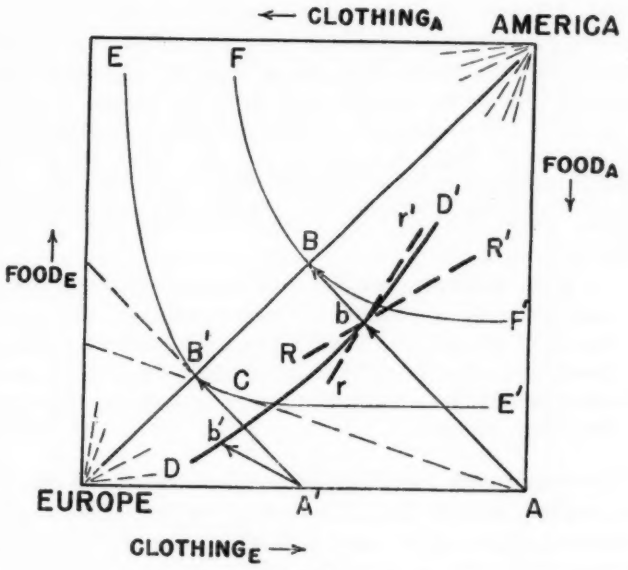

FIG. 2

Basic convention implies Engel's curves are spokes out from origin, so tariffs produce orthodox deterioration. None the less, as Europe moves from B' to C, dearer imports cause relative expenditure on imports to rise; with "elasticity of substitution" less than one for both countries, terms of trade change in anti-orthodox fashion in real impediment cases.

relatively more of its own good its income–consumption curve flattens out in an unambiguous manner. Hence, everywhere on the DD' locus, Europe's income–consumption slope is flatter than that of America: with $c_A/f_A < c_A/f_A$, we know that Europe's terms of trade must deteriorate in the orthodox fashion.[1]

[1] Mathematically $r(Y, \bar{F} - X) = g[Y/(\bar{F} - X)]$, with $g > 0$, $g' < 0$; also $R(\bar{C} - Y, X) = G[(C - Y)/X]$, with $G > 0$, $G' < 0$. The criterion $c_A/f_A - c_E/f_E$ turns out to be $(\bar{F} - X)/Y - X/(\bar{C} - Y)$; because DD' lies eastward of the diagonal, this is seen to be algebraically negative.

X. Inconclusive Results in Case of Real Impediments

If we are willing to postulate the Basic Convention of unitary income elasticities (*i.e.*, equal average and marginal propensities to consume), can we also re-establish the orthodox presumptions in the case of real transport costs? The answer is, Not necessarily. Our graphical analysis applied only to the tariff and zero-impediments. It fails to handle the real transport cost case, because then the final consumption equilibrium points for the two countries do *not* coincide, instead differing by a vector representing the amounts of the goods actually used up in transport.

As yet we have deduced no rigorous criterion to handle the real cost case. Such a criterion will be developed later by straightforward but tedious mathematical argument. For those uninterested in such derivations, I may briefly state the final result:

> When there are real transport costs, the payer's terms of trade will improve, remain unchanged or deteriorate, depending upon whether the payer's marginal (income) propensity to consume its own product is less than, equal to or greater than the receiver's marginal (income) propensity to consume that same product.[1]

Now even with the assumption favorable to the orthodox view, namely Viner's Basic Convention, we *cannot* be sure how cheapening one's export good will affect its relative marginal (income) propensity to consume. Its physical output can be expected to decline relatively, but as argued in pp. 292–4 of Part I, no iron-clad presumptions are possible concerning *marginal propensities.*

Actually, our Basic Convention postulates unitary income elasticities, and therefore we can completely identify the marginal propensity to consume with the average propensity to consume. Casual econometricians, a class to which I belong, feel more confident in speculating about the latter than about the former. None the less, as the example of Fig. 2 shows, relative expenditure on clothing may decline for Europe as it becomes cheaper. Europe's indifference curve EE' has been drawn with the usual

[1] In symbols $C_A \gtrless C_B$ is our valid criterion for this case—or what is almost the same thing, $F_B \gtrless F_A$, or $C_A/F_A \gtrless C_B/F_B$. Note that the geometrical slopes of income-consumption curves are no longer relevant: such expressions as c_A/f_A and c_B/f_B must first be multiplied by $(P_c/P_f)_A$ and $(P_c/P_f)_B$ before they can be compared, and these last now differ by the factor $a_x a_y < 1$.

shape and curvature: however, by measuring the relative lengths of the stretches on the budget line from each consumption point to the two axes, the reader may verify that for a considerable stretch eastward of the diagonal, the relative clothing price drops faster than its consumption expands. The crucial determinant of how relative expenditure changes can be shown to be the so-called "elasticity of substitution," whose magnitude permits of no uniform predictions.[1]

Unlike the case of tariffs, the case of real transport costs cannot therefore be definitely brought into the orthodox camp, even by means of the Basic Convention. As far as a pedantical economist can go seems to be the following:

> Even with unitary income elasticities, real transport costs may cause average and marginal propensities to consume to decrease as a good becomes cheap, thereby reversing the orthodox effect on terms of trade.[2] Perhaps as transport costs become very great, thereby raising the costs of imports a great deal, there may be a presumption of ultimate extinction of consumption of the imported good permitting us to infer an ultimate move of marginal and average propensities to consume in the direction needed for the orthodox result.[3]

XI. Fundamental Criteria for All Cases

In this section I present mathematical derivations of terms-of-trade criteria for all three cases: (i) zero impediments to trade, (ii) real cost impediments, and (iii) artificial impediments of tariffs or quotas.

[1] Geometrically, the "elasticity of substitution" of Robinson–Hicks–Pigou may along an indifference curve be greater than, equal to or less than unity in magnitude. Nothing prevents Nature from presenting us with indifference curves that for stretches, and even everywhere, have elasticities of substitution less than unity. See R. G. D. Allen, *Mathematical Analysis for Economists*, for discussion of the elasticity of substitution concepts and further references.

[2] Extreme transport costs and tariffs will almost certainly ultimately choke off imports by raising their prices beyond the point at which competing domestic supplies can fulfil the total domestic demand: when the markets have become split up and separated, the transfer will have to take place completely in terms of whichever good is specified in the payment contract. The result will be to shift the clothing–food terms of trade in opposite directions in the two countries, raising its price where one of the goods has become relatively scarce and lowering it where the good has become abundant. The orthodox view is not particularly realised in this extreme case of unconnected markets: indeed, with no sale of exports, the concept of a country's net terms of trade becomes vacuous.

[3] This presumption exists if the indifference curves are postulated to intersect the axes; if they become horizontal at interior saturation levels, the opposite presumption exists.

Equations (4) define equilibrium in case (ii). Note that for $a_x = 1 = a_y$, (4) will also cover case (i). By differentiating the relation (4) with respect to the unilateral payment, K, we easily get three linear relations in the derivatives $d(P_c/P_f)_I/dK$, dX/dK, and dY/dK. Solving these, by determinants or otherwise, we can find the criterion that governs the algebraic sign of the derivative of the price ratio with respect to the indemnity.

We differentiate (4) totally with respect to K to yield equations that are linear in the three derivatives dY/dK, dX/dK, and most important for the present purpose, $d(P_c/P_f)_I/dK$:

$$
\begin{aligned}
& a_y(a_y r_1)\frac{dY}{dK} - a_y r_2 \frac{dX}{dK} - 1\,\frac{d(P_c/P_f)_I}{dK} = 0 \\
& -\frac{1}{a_x} R_1 \frac{dY}{dK} + \frac{1}{a_x}(a_x R_2)\frac{dX}{dK} - 1\,\frac{d(P_c/P_f)_I}{dK} = 0 \\
& +1\,\frac{dY}{dK} - \frac{1}{(P_c/P_f)_I}\frac{dX}{dK} - \frac{Y-K}{(P_c/P_f)_I}\frac{d(P_c/P_f)_I}{dX} = +1
\end{aligned}
\tag{8}
$$

where numerical subscripts on the r and R functions indicate partial derivatives with respect to the indicated argument, so that $r_1 = \partial r(c, f)/\partial c$, etc.

By means of determinants, or otherwise, we can solve these linear equations to determine what the change in the terms of trade depends on, namely

$$
\frac{d(P_c/P_f)_I}{dK} = \frac{\begin{vmatrix} a_y(a_y r_1) & -a_y r_2 \\ -R_1/a_x & \frac{1}{a_x}(a_x R_2) \end{vmatrix}}{\Delta} = \frac{\left(-\frac{r_2}{r_1}\right) - a_x a_y \left(-\frac{R_2}{R_1}\right)}{a_x(-r_1)(-R_1)a_y^{-1}\Delta} \tag{9}
$$

where Δ is the determinant of all the left-hand coefficients of the linear equations (8), which can be shown to be positive as a condition for " stability " of our system. If neither good is an inferior good, every factor in the denominator of the last expression in (9) can be verified to be positive, and hence the numerator alone provides a rigorous criterion for the shift in the terms of trade. Since it is easy to show that the terms in parentheses in the numerator are the slopes of the income–consumption curves of the respective countries, namely c_A/f_A and c_E/f_E, we can rewrite our criterion in the form

$$
\frac{d(P_c/P_f)_I}{dK} \gtrless 0, \text{ if } \frac{c_A}{f_A} \gtrless a_x a_y \frac{c_E}{f_E}
$$

or

$$
\left(\frac{P_c}{P_f}\right)_A \frac{c_A}{f_A} = \frac{C_A}{F_A} \gtrless \frac{C_E}{F_E} = \left(\frac{P_c}{P_f}\right)_E \frac{c_E}{f_E} = \left(\frac{P_c}{P_f}\right)_A a_x a_y \frac{c_E}{f_E}
$$

Of course, if $a_x = 1 = a_y$ because there are zero impediments, then the physical marginal propensities, written in lower-case letters, will be proportional to the dimensionless marginal-income propensities, written in capital letters; and then either may be used as a criterion.

All our criteria are summed up in Table IV. To handle the tariff case rigorously, the reader can supply for himself the differentiation of equations (7) with respect to K to get the linear equations in the derivatives. Because (7) differs from (4) only in the fact that the factor a_y no longer appears within r and a_x no longer within R, the new linear equations will differ from (8) only by the replacement of $(a_y r_1)$ and $(a_x R_2)$ by r_1 and R_2. Hence, for the artificial barrier case, our criterion becomes

$$\frac{d(P_c/P_f)_I}{dK} \gtrless 0 \text{ if } \frac{c_A}{f_A} \gtrless \frac{c_E}{f_E} \text{ or } a_x a_y \frac{C_A}{F_A} \gtrless \frac{C_E}{F_E}$$

Table IV also relates Pigou's form of the criterion, based on independent utilities, to the different types of transport costs. Equation (4)′ of an earlier footnote showed how the Pigou analysis is modified by the appearance *inside* and *outside* of the r and R functions of the factors a_y and a_x. The reader can easily verify how the tariff-case version of these coefficients outside the functions leads to Table IV's version of the Pigou criterion.

It will be noted that whether impediments are real or artificial, the Pigou criteria are modified so as to lead in the direction opposite to the orthodox presumption: *i.e.*, the a_x and a_y terms always appear as depressants on the right-hand side of the criteria. Clearly Professor Pigou intends the assumption of linearity of marginal utility to be only a local approximation. If we permit his coefficients ϕ', f', ψ' and F' to be variables rather than constants, we can muster up some comfort for the orthodox view: Providing the rate of change of the rate of change of marginal utility (*i.e.*, the *third* derivative of the utility function) is assumed to be sufficiently negative for all goods, then the depressing effects of the a_x and a_y coefficients may be more than offset by the change in the ϕ', f', ψ' and F' coefficients, and the orthodox effect can result. Since rightly or wrongly, economists usually draw marginal utility curves that are concave from above, the orthodox case is not necessarily refuted by the assumption of independent utilities.[1]

[1] All this can be understood best in terms of a plotting of the indifference curves and their income–consumption curves. If each good becomes free at a finite level of consumption, the independent utility assumption does near the

TABLE IV

Summary of Criteria for Paying Country's Terms-of-trade Change

	Zero trade impediments.	Real transport costs ($a_x < 1, a_y < 1$).	Tariff and artificial barriers ($a_x < 1, a_y < 1$).
Marginal income propensities to consume (dimensionless)	$C_A \gtreqless C_B$ or $\frac{C_A}{F_A} \gtreqless \frac{C_B}{F_B}$	$C_A \gtreqless C_B$ or $\frac{C_A}{F_A} \gtreqless \frac{C_B}{F_B}$	$a_x a_y \frac{C_A}{F_A} \gtreqless \frac{C_B}{F_B}$
Physical marginal propensities or relative slopes of income-consumption curves	$\frac{c_A}{f_A} \gtreqless \frac{c_B}{f_B}$	$\frac{c_A}{f_A} \gtreqless a_x a_y \frac{c_B}{f_B}$	$\frac{c_A}{f_A} \gtreqless \frac{c_B}{f_B}$
Pigou criterion	$\left\lvert\frac{\psi'}{F'}\right\rvert \gtreqless \left\lvert\frac{\phi'}{f'}\right\rvert$	$\left\lvert\frac{\psi'}{F'}\right\rvert \gtreqless (a_x a_y)^2 \left\lvert\frac{\phi'}{f'}\right\rvert$	$\left\lvert\frac{\psi'}{F'}\right\rvert \gtreqless a_x a_y \left\lvert\frac{\phi'}{f'}\right\rvert$
Strict linear marginal utilities, identical tastes	No change in terms of trade	Anti - orthodox change in favor of payer	Anti - orthodox change in favor of payer
Basic convention of unitary income elasticities, ($MPC = APC$), identical tastes	No change in terms of trade	Either change depending on whether elasticity of substitution along an indifference curve is numerically greater than one (orthodox) or less than one (anti-orthodox)	Orthodox change against payer
Export and import good with outputs variable	Same as above but with "less leverage."		
"Domestic" goods	Orthodox view favored, provided domestic goods are "more competitive on the production side" with export goods than with import goods.		

XII. VARIABILITY OF OUTPUT

Dropping the assumption of fixed production of the two goods in both countries will not affect qualitatively our above analysis and conclusions, for reasons that were discussed in Part I. Even if food can be substituted for clothing along a familiar production-possibility schedule, no change in production will take place unless our criterion dictates a change in relative prices.[1] The

saturation levels lead to income or Engel curves that fan *in*ward, thereby negating the orthodox view (see Fig. 1). But in between the zones of saturation, we can easily find examples of independent utilities where the Engel's curves fan out in a more realistic fashion. Note that the independence assumption is incompatible with the Basic Convention of unitary income elasticities. If I were forced to accept one simple assumption, I should perhaps prefer the latter to the former.

[1] To prove this rigorously, see ECONOMIC JOURNAL, 1952, p. 300, n. 2. The factors a_y and a_x must be introduced into the systems shown there in an obvious

only difference is this: If the criterion does dictate a change in relative prices, the elasticity of response of outputs can be expected to moderate the quantitative degree of the resulting change in prices.

The late Frank D. Graham for thirty years insisted that "net elasticities" in international trade were greater than most writers thought. Indeed, in Graham's view, they are infinite or almost so because of his extreme constant-costs assumptions of the classical type.[1] I see no point at this date in re-arguing whether both blades of the Marshallian scissors do the cutting in such extreme cases. But on the substantive point of the effect on elasticities of assuming many countries or many sources of supply, I should put the matter this way: Introducing many alternative supply sources exactly like what one already has seems to increase the scale of all processes, and hence naturally leads to the same-sized disturbances having smaller price effects; but it is not clear to me why as the world grows in scale, the size of the postulated disturbances should not grow commensurately. Note, too, that introducing new supply sources which produce at *different* constant-cost levels seems, in my view, to work *against* the Graham thesis of almost infinitely elasticity. Similarly, introducing many goods producible at constant costs will lessen the impact of one small micro-economic disturbance; but

way, and then the equation must be differentiated to verify that our same criteria do apply. This involves about ten equations in as many unknowns; by the following simple analysis, we can fortunately reduce the problem to a single derived equation in one unknown.

Let small letters stand for America, capitals for Europe, let p and $P = a_x a_y p$ be short for $(P_c/P_f)_A$ and $(P_c/P_f)_E$. For each country, output will be determined so as to yield, for each domestic price p or P, a maximum value of national product or income expressed in, say, food-numeraire units; call these respectively $i(p)$ and $I(P)$, where $i'(p) > 0$, $I'(P) > 0$.

The quantity of clothing supplied in each country will be given by positively inclined functions $s(p)$ and $S(P)$, and the demands for clothing will be given by functions d and D; these depend upon clothing price (in food-numeraire units) and upon each country's income (expressed in numeraire units) including algebraic transfer payments of $+pa_yK$ for America and $-PK$ for Europe.

The equilibrium is defined by equality of the net demand of America for clothing to the net supply of Europe's clothing that comes through to America after real transport costs: or, recalling $P = a_x a_y p$, we have the single equilibrium equation

$$\{d(p, i(p) + pa_yK) - s(p)\} - a_x\{S(P) - D(P, I(P) - PK)\} = 0 = E(P, K)$$

This defines either unknown price in terms of the transfer K. Differentiating, we get

$$\frac{dP}{dK} = a_x a_y \frac{dp}{dK} = \left(p\frac{\partial d}{\partial i} - P\frac{\partial D}{\partial I}\right)\Big/\Delta_1$$

where $\Delta_1 = -\partial E/\partial P > 0$ for a "stable" system, and where increases in the supply slopes S' and s' cause the denominator to grow.

[1] See *Theory of International Values* (Princeton, 1948).

it is not at all clear to me that the effect of, say, a post-war disturbance of macro-economic type will be quantitatively different in its impact on an economy that concentrates its consumption on a few goods producible at constant costs than on an economy that chooses to spend a very little on a great many such goods. Only if one brings in Chamberlinian phenomena of monopolistic competition do substantive effects arise, and then I suspect analysis of market imperfections due to product differentiation will show that this works against rather than for Graham's thesis of high elasticity.

XIII. Final Qualifications

The Pigou–Jevons two-good model in its slightly generalised form has been squeezed dry of its implifications. Yet we are still a long way from the conditions of the real world, involving many goods and various types of market imperfections and trade impediments. With some diffidence, I venture a few tentative speculations as to what the effects of these complications are on the transfer problem.

Many goods with varying transport costs, a_x, a_y, a_z . . . can be first handled on the assumption of fixed outputs : Any criteria sufficient to hold all relative prices invariant under these conditions can apply to the case of varying outputs—since outputs will not in fact vary without relative prices varying. Expressing the indemnity or payment in terms of specified goods of one or both countries, we can ask the question : In addition to the " primary burden," what is the " secondary burden " on each country as measured by each country's price changes weighed by its *algebraic* imports.

Economic theory does not permit me to give an answer to this question. Even in the case where domestic goods are created in each economy by transport costs (which suggest that elasticity of substitution for the imported goods ultimately becomes elastic in the orthodox manner), it is not clear that the terms of trade, as defined in the previous paragraph or by comparing non-domestic import goods' prices with export prices, can be presumed to change in any one direction.[1]

Yet, as Part I indicated on p. 302, the Viner model of one or more domestic goods in each country which are perfect substitutes on the production side for export goods does provide us with one rigorous and impressive defense of the orthodox view. With

[1] See Part I's discussion, Economic Journal, 1952, pp. 302–3 of the inconclusive case of fixed production with domestic goods.

export and domestic goods always having the same relative costs and prices, we may lump their expenditure together *à la* Hicks; then the Basic Convention will permit us to assume that less is spent marginally and on the average on imput goods, so that our criterion leads to the orthodox presumption.

In a pure Ricardian constant-cost world, a country can usually be assumed to produce none of the goods it imports. Therefore, domestic goods must compete with export goods alone, as in the Viner case. Professor Haberler has asked me whether it would not be possible to find models in which domestic goods were substitutable on the production side for imported goods, thus leading to anti-orthodox criteria. A number of such models are easily constructed.

Thus, suppose the same factors produced bricks in America as produced clothing; suppose, too, that the production-possibility schedule between food and clothing shows strongly increasing relative marginal costs, with the result that in equilibrium some clothing is produced as well as imported. Then for America bricks and clothing may be treated as a composite Hicksian commodity of high expenditure relative to food. Similarly, in Europe there will be low relative expenditure on its export goods relative to remaining goods. Assuming identical average and marginal propensities, we can deduce $C_A > C_E$ and an anti-orthodox improvement in the payer's net terms of trade.

The real world may be somewhere in between: domestic goods or goods whose transport costs are so heavy as to discourage their import relative to their home production may turn out to be substitutable on the production side with both *imports* and *exports*, being infinitely substitutable with neither. It then becomes a case of nice quantitative weighting, beyond the powers of casual econometricians and indeed under present conditions often beyond the powers of the most intensive statistical measurement and inference, to provide us with any final answers. On the whole, I—and I think Haberler—would be inclined to regard the relations between export and domestic goods as outweighing those between import and domestic goods, in accordance with the Viner hypothesis and the orthodox conclusion.

It is well to know just how strong or weak the orthodox view on the effects of transfer are. Findings of the present research on pure barter models are summarised in Table IV.

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STABILISATION POLICY IN A CLOSED ECONOMY [1]

RECOMMENDATIONS for stabilising aggregate production and employment have usually been derived from the analysis of multiplier models, using the method of comparative statics. This type of analysis does not provide a very firm basis for policy recommendations, for two reasons. First, the time path of income, production and employment during the process of adjustment is not revealed. It is quite possible that certain types of policy may give rise to undesired fluctuations, or even cause a previously stable system to become unstable, although the final equilibrium position as shown by a static analysis appears to be quite satisfactory. Second, the effects of variations in prices and interest rates cannot be dealt with adequately with the simple multiplier models which usually form the basis of the analysis.

In Section I of this article the usual assumption of constant prices and interest rates is retained, and a process analysis is used to illustrate some general principles of stabilisation policies. In Section II these principles are used in developing and analysing a more general model, in which prices and interest rates are flexible.

SECTION I

Some General Principles of Stabilisation

1. *The Model* [2]

The model consists of only two relationships. On the supply side, it is assumed that the rate of flow of current production, measured in real units per year and identical with the flow of real income, is adjusted, after a time lag, to the rate of flow of aggregate demand, also measured in real units per year. On the demand side, it is assumed that aggregate demand varies with real income or production, without significant time lag.[3] The proportion by which any change in aggregate demand induced by a change in real income falls short of that change in income will be called the marginal leakage from the system. In the simplest

[1] This article is based on part of the material of a thesis submitted to the University of London for the degree of Ph.D. I am indebted to Mr. A. C. L. Day, Mr. A. D. Knox, Professor J. E. Meade, Mr. W. T. Newlyn, Professor Lionel Robbins and Dr. W. J. L. Ryan for helpful comments on an earlier draft.

[2] A mathematical treatment of models used and of the stabilisation policies applied to them is given in the Mathematical Appendix.

[3] A demand lag could be introduced in addition to the production lag, but has been omitted to avoid complicating the mathematical treatment.

case of a closed economy with government ignored and with constant investment it is equal to the marginal propensity to save. In all the illustrations given below the marginal leakage is assumed to be 0·25.

The response of production to changes in demand is assumed to be gradual and continuous. For aggregative models this is more realistic than the usual assumption that production changes in sudden jumps. Even if each producer were to have a rigid production plan which he altered only at intervals of several months, the planning periods of the thousands of individual

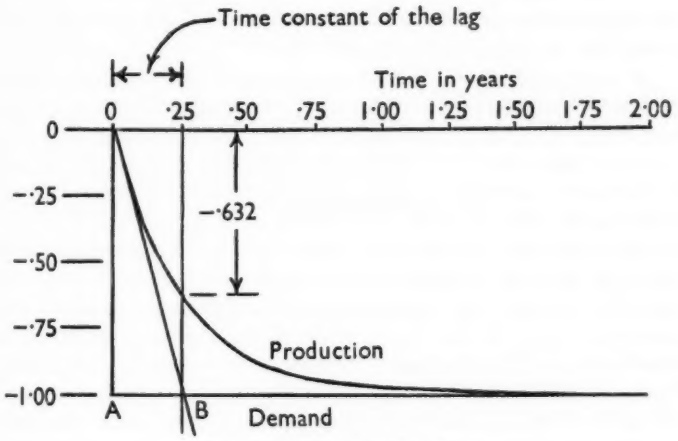

FIG. 1.—Single production lag.

producers would overlap, and the response of aggregate production to a sudden change in aggregate demand would consequently be more nearly approximated by a continuously changing variable than by one changing only at discrete intervals of time. To obtain a model in which this continuous change is represented, a distributed time lag is introduced by the hypothesis that whenever the production flow is different from the flow of demand, the production flow will be changing in a direction which tends to eliminate the difference and at a rate proportional to the difference.

The implications of this hypothesis are illustrated in Fig. 1, which shows the change that would occur in production if, from an initial equilibrium position, demand were to fall by one unit at time zero and to remain constant thereafter, on the assumption that the rate of change of production, measured in units per year per year, is four times the difference between demand and production,

both measured in units per year. The factor of proportionality, 4 in this case, is a measure of the speed of response of production to changes in demand, and is indicated in Fig. 1 by the slope of the line OB, drawn tangential to the production-response curve at O. Its reciprocal is a measure of the slowness of response, or time taken to adjust production to changes in demand, and is called the time constant of the production lag. In this case it is equal to 3 months or 0·25 of a year, and is indicated in Fig. 1 by the length of the line AB. The time constant may also be defined as the time that would be taken, after a sudden change in demand, for production to change by an amount equal to 0·632 [1] of the full adjustment required for a new equilibrium, if demand were meanwhile to remain constant at its new value.

It is possible that a better representation of the real process of adjustment would be obtained by analysing the time lag into a number of separate components operating consecutively. For example, there may be a time lag in observing that an adjustment is necessary, another in making the decision to carry out the adjustment, and a third in actually making the adjustment. If two such lags are assumed, each with a time constant of $6\frac{1}{2}$ weeks so that the combined time constant is 3 months as in the previous example, the time path of the adjustment becomes that shown in Curve (*b*) of Fig. 2, while if three consecutive lags are assumed, each with a time constant of $4\frac{1}{3}$ weeks, the time path becomes that shown in Curve (*c*) of Fig. 2.[2] Although the slower adjustment obtained in the initial stages of the process with these multiple lags may be more realistic than that which results from the assumption of a single lag, the single lag is retained in the following analysis in order to simplify the mathematics.[3] In all the illustrations given below, the time constant of this single production lag is assumed to be 3 months.

In the complete model demand does not remain constant during the process of adjustment, but itself responds to changes in real income and production. It is therefore necessary to

[1] Or $1 - e^{-1}$, where e is the base of Napierian logarithms.

[2] If the number of consecutive lags is increased indefinitely, the time constants of the separate lags being simultaneously reduced so that the combined time constant remains fixed, the time path approaches the limit of a step function, jumping from 0 to −1 after a period of time equal to the combined time constant. I am indebted to Mr. J. Wise for providing me with a rigorous mathematical proof of this.

[3] Since aggregate production includes services, the provision of which responds instantaneously to changes in the demand for them, the more rapid initial response obtained by assuming a single lag may in fact represent quite a good approximation to the real process of adjustment.

distinguish between an initial or spontaneous change in demand, representing a disturbance or change in the relationships of the model, and the additional or induced changes in demand which result from the dependence of demand on production and in turn induce further changes in production by the familiar multiplier process. When these induced effects are taken into account the

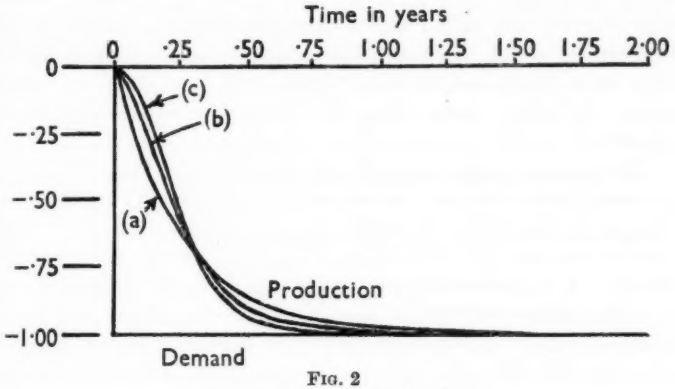

FIG. 2

Curve (*a*), single production lag.
Curve (*b*), double production lag.
Curve (*c*), triple production lag.

response of production, measured from an initial equilibrium value, to a spontaneous fall in demand of one unit, occurring at time zero and continuing thereafter, is shown by Curve (*a*) of Fig. 3. This is, of course, simply a continuous version of the ordinary multiplier process, the multiplier being the reciprocal of the marginal leakage, or 4.

2. *The Stabilisation Problem*

The adoption of a policy for stabilising production implies that there is some level of production which it is desired to maintain. The desired level may be that which, given the existing productive resources, would result in a certain level of employment, or it may be that which would result in a constant price index of consumers' goods, or the choice may be based on a number of other economic, political or social considerations. For the limited purpose of studying the principles of stabilisation in a closed economy the choice of desired production may be considered as given. The difference between the actual production and desired production at any time will be called the error in production.

Stabilisation policy consists in detecting any error and taking

correcting action, by altering government expenditure, taxation, or monetary and credit conditions, in order to change demand in a direction which tends to eliminate the error. The amount by which aggregate demand would be changed as a direct result of the stabilisation policy (*i.e.*, excluding the further changes in demand which will be induced automatically through the operation of the multiplier process) if the policy were to operate without time lag will be called the potential policy demand, and the amount by which aggregate demand is in fact changed at any time as a direct result of the policy will be called the actual policy demand. Both may, of course, be either positive or negative.

The actual policy demand will usually be different from the potential policy demand, owing to the time required for observing changes in the error, adjusting the correcting action accordingly and for the changes in the correcting action to produce their full effects. A distributed time lag can again be introduced by the hypothesis that whenever such a difference exists the actual policy demand will be changing in a direction which tends to eliminate the difference and at a rate proportional to the difference. The time constant of this lag can then be defined in the same way as was done in the case of the production lag. The examples given below have been worked out for alternative correction lags with time constants of six months and six weeks respectively.

A number of different types of stabilisation policy will now be considered, corresponding to the different ways in which the correcting action taken may be related to the error in production.[1]

3. *Proportional Stabilisation Policy*

The simplest type of stabilisation policy is one in which the correcting action taken is such that the potential policy demand is made proportional in magnitude and opposite in sign [2] to the error in production. The ratio of the potential policy demand to the error, which is a measure of the strength of the stabilisation policy, will be called the proportional correction factor. As an example, a proportional correction factor of 0·5 would mean that

[1] The following treatment is an application of the general principles of automatic regulating systems and closed-loop control systems, in the analysis of which notable advances have been made in recent years. Cf. G. H. Farrington, *Fundamentals of Automatic Control*, Chapman and Hall, London, 1951; and Brown and Campbell, *Principles of Servomechanisms*, John Wiley and Sons, New York, 1948. On the use of closed-loop control theory in economics, cf. A. Tustin, *The Mechanism of Economic Systems*, Heinemann, London, 1953.

[2] That is, the principle of "negative feed-back" is used.

if production was 2% below the desired value the authorities concerned would attempt directly to stimulate demand by an amount equal to 1% of production (excluding the further increase which would be induced through the multiplier effects), and as the error was gradually reduced as a result of this action they would decrease the potential policy demand proportionately.

To show the effect of such a policy, it will be assumed that from an equilibrium position with production at the desired value there occurs at time zero and continues thereafter a spontaneous

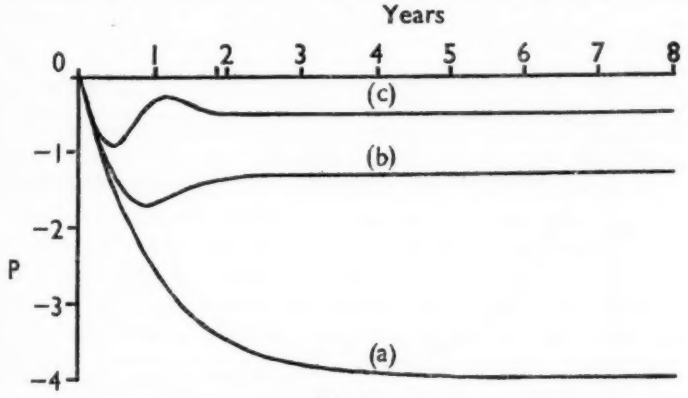

FIG. 3

Curve (*a*), no stabilisation policy.
Curve (*b*), $f_p = 0{\cdot}5$, $T = 6$ months.
Curve (*c*), $f_p = 2$, $T = 6$ months.

Note.—The symbols used in Figs. 3 to 9 inclusive have the following meanings:

P Change in production (measured from initial equilibrium).
f_p Proportional correction factor.
f_i Integral correction factor.
f_d Derivative correction factor.
T Time constant of the correction lag.

fall in demand of one unit. The resulting time path of production, if the proportional correction factor is 0·5 and the correction lag has a time constant of 6 months, is shown by Curve (*b*) of Fig. 3. The marginal leakage is assumed, as before, to be 0·25 and the production lag to have a time constant of 3 months, so the effect of the stabilisation policy can be seen by comparing Curve (*b*) with Curve (*a*). Curve (*c*) of Fig. 3 shows the effect of a stronger policy with a proportional correction factor of 2, the time constant of the correction lag again being 6 months. In the examples illustrated in Fig. 4 the time constant of the correction lag has been reduced to 6 weeks, the proportional correction factor again being zero for Curve (*a*), 0·5 for Curve (*b*) and 2 for Curve (*c*).

Two defects of a proportional stabilisation policy are immediately apparent. First, complete correction of an error is not obtained, since the correcting action continues only because the error exists. If the spontaneous change in demand is denoted by δ, the error in the final equilibrium level of production by ϵ, the proportional correction factor by f_p and the marginal leakage by l, in the final equilibrium the sum of the spontaneous and the policy changes in demand will be $\delta - f_p\epsilon$. The usual multiplier formula applies, so the total change in demand and production,

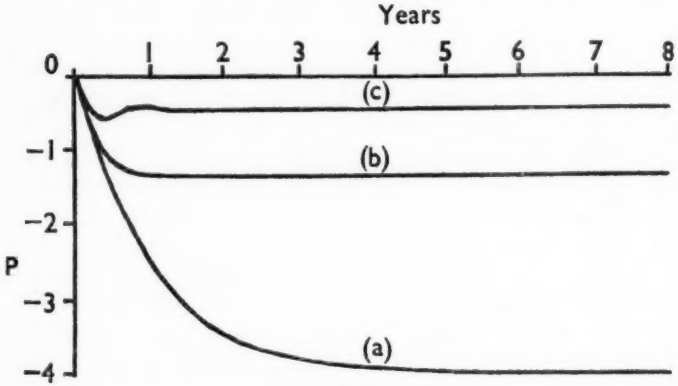

FIG. 4

Curve (*a*), no stabilisation policy.
Curve (*b*), $f_p = 0{\cdot}5$, $T = 6$ weeks.
Curve (*c*), $f_p = 2$, $T = 6$ weeks.

including the change induced by the multiplier process, will be $\frac{\delta - f_p\epsilon}{l}$. But the change in production is also the error, so that $\frac{\delta - f_p\epsilon}{l} = \epsilon$, from which $\epsilon = \frac{\delta}{l + f_p}$. When this type of policy is applied, therefore, the static multiplier becomes the reciprocal of the sum of the marginal leakage and the proportional correction factor, and a proportional correction factor of infinity would be required if the error were to be completely eliminated. The second defect of a proportional stabilisation policy is that it tends to cause a cyclical fluctuation in the time path of production, this fluctuation being the greater, the stronger the policy and the longer the time lag involved in applying it.

It may be noted that the proportional correction factor and the marginal propensity to save, or more generally any marginal leakage, have similar effects on the stability of the system. With

a marginal propensity to save of zero, the simple multiplier system assumed so far would have no inherent regulation at all, *i.e.*, no stable equilibrium position would exist. With a positive marginal propensity to save, the change in demand resulting from a given change in production would differ from what it would have been if the marginal propensity to save had been zero by an amount proportional in magnitude and opposite in sign to the change in production. The marginal propensity to save therefore acts as a regulating mechanism of the proportional type inherent in the economy.

4. *Integral Stabilisation Policy*

An integral stabilisation policy is one in which the potential policy demand at any time is made proportional in magnitude and opposite in sign to the cumulated error up to that time, *i.e.*, to the time integral of the error instead of to the magnitude of the error. In terms of Figs. 3 and 4, with an integral stabilisation policy the potential policy demand at any time is made proportional to the area between the actual production curve and the desired production curve (or zero line) up to that time, whereas with a proportional stabilisation policy it is made proportional to the vertical distance between the two curves at that time. The ratio of the potential policy demand to the time integral of the error will be called the integral correction factor. If an error in production of 2% were to occur and to persist for a year, then with an integral correction factor of 0·5 the potential policy demand would be increased steadily from zero at the beginning to 1% of production at the end of the year. It is clear that with an integral stabilisation policy the final equilibrium position, if it exists, will be one in which the error is completely eliminated, since so long as even the smallest error persists the cumulated error or time integral of the error must be continuously increasing, and with it the magnitude of the correcting action, so that equilibrium is possible only when the error is zero.

It will be found, however, that in thus avoiding the first defect of a proportional correction policy, the second defect, the introduction of cyclical fluctuations, is greatly aggravated, and for this reason integral correction is rarely used alone in automatic control systems. There may, however, be a tendency for monetary authorities, when attempting to correct an " error " in production, continuously to strengthen their correcting action the longer the error persists, in which case they would be applying an integral

correction policy.[1] Also, it will be argued in Section II of this article that flexible prices in an economy operate as an inherent regulating mechanism of the integral type. The integral relationship may therefore be of some importance in a number of economic adjustments.

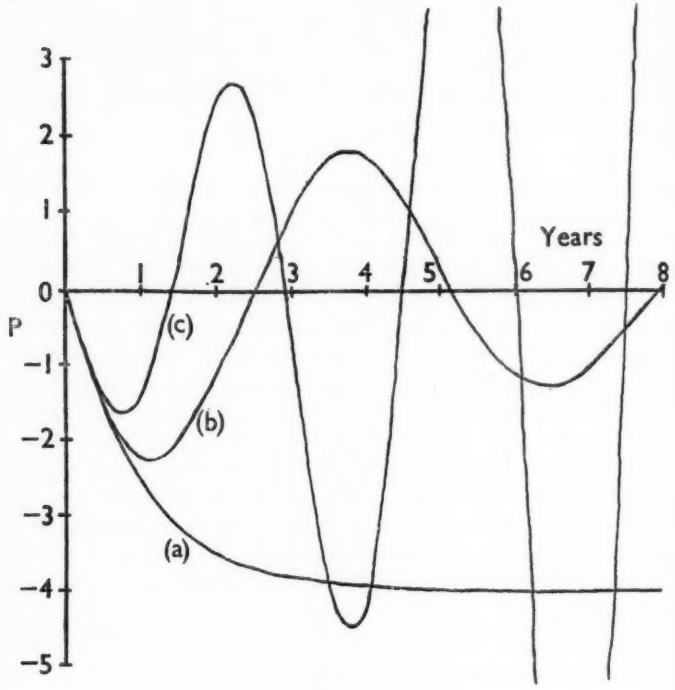

FIG. 5

Curve (*a*), no stabilisation policy.
Curve (*b*), $f_i = 0{\cdot}5$, $T = 6$ months.
Curve (*c*), $f_i = 2$, $T = 6$ months.

Figs. 5 and 6 show the effects of applying an integral stabilisation policy. The assumptions of the basic model and the type of disturbance are the same as in the previous examples. Curves

[1] International adjustments are not dealt with in this article; but it may be worth noting here that a country which attempts to regulate its current balance of payments, whether by means of internal credit policy or quantitative import control, and in doing so responds mainly to the size of its foreign reserves (*i.e.*, to the time integral of its current balance of payments) is applying an integral correction policy which is likely to cause cyclical fluctuations similar to those illustrated in Figs. 5 and 6. The short cycles which have occurred in the balances of payments of a number of countries since the war may be in part the result of such action.

(*a*) again show the response of production to unit spontaneous fall in demand when there is no stabilisation policy. In Fig. 5, Curve (*b*) shows the effect of adopting a stabilisation policy with an integral correction factor of 0·5, and Curve (*c*) the effect of a stronger policy with an integral correction factor of 2, the time constant of the correction lag being 6 months in each case. Curves (*b*) and (*c*) in Fig. 6 show how the response is modified when the time constant of the correction lag is reduced to 6 weeks, the integral correction factor again being 0·5 for Curve (*b*) and 2 for Curve (*c*).

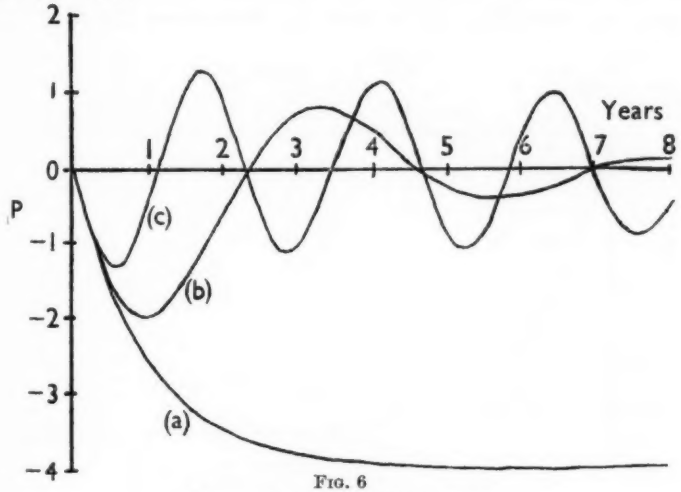

FIG. 6

Curve (*a*), no stabilisation policy.
Curve (*b*), $f_i = 0{\cdot}5$, $T = 6$ weeks.
Curve (*c*), $f_i = 2$, $T = 6$ weeks.

It will be seen that even with a low value of the integral correction factor, cyclical fluctuations of considerable magnitude are caused by this type of policy, and also that the approach to the desired value of production is very slow. Moreover, any attempt to speed up the process by adopting a stronger policy is likely to do more harm than good by increasing the violence of the cyclical fluctuations, particularly when the time lag of the correcting action is long. With an integral correction factor of 2 and a correction lag of 6 months, as illustrated in Curve (*c*) of Fig. 3, the system has become dynamically unstable. In such a case the oscillations would increase in amplitude until limited by non-linearities in the system and would then persist within those limits so long as the policy was continued.

5. *Proportional Plus Integral Stabilisation Policy*

A combination of proportional and integral stabilisation policies gives much better results than either policy alone. This can be seen from Figs. 7 and 8, in which Curves (*a*) again show the response of production to unit spontaneous fall in demand in the absence of stabilisation policy. Curve (*b*) of Fig. 7 shows how this response is modified if a stabilisation policy is adopted having a proportional correction factor of 0·5 plus an integral correction factor of 0·5, the time constant of the correction lag being 6 months. The proportional element in the policy helps to speed up correction and to limit the fluctuations caused by the

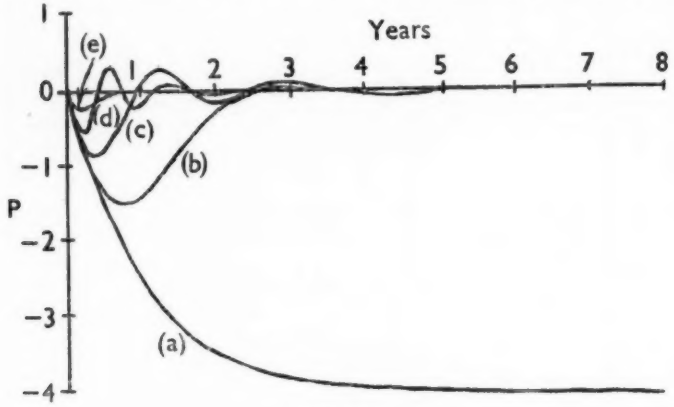

FIG. 7

Curve (*a*), no stabilisation policy.
Curve (*b*), $f_p = 0{\cdot}5$, $f_i = 0{\cdot}5$, $T = 6$ months.
Curve (*c*), $f_p = 2$, $f_i = 2$, $T = 6$ months.
Curve (*d*), $f_p = 8$, $f_i = 8$, $T = 6$ months.
Curve (*e*), $f_p = 8$, $f_i = 8$, $f_d = 1$, $T = 6$ months.

integral policy, while the integral element provides the complete correction unobtainable with the proportional policy alone. Curve (*c*) of Fig. 7 shows the response when a stronger policy is adopted, keeping the same proportion between the two elements, both correction factors being raised to 2, while in Curve (*d*) they are raised to 8, the correction lag remaining at 6 months in each case.

In the examples illustrated in Fig. 8 the time constant of the correction lag is reduced to 6 weeks. Curve (*b*) shows the response when both proportional and integral correction factors are 0·5. Comparing this with Curve (*b*) of Fig. 7, it may appear paradoxical that with a shorter correction lag a longer time elapses before

something near full correction is obtained. The reason for this is that the more rapid operation of the policy results in a smaller error in the early stages of the adjustment, so that the cumulated error which forms the basis of the integral element is reduced, so reducing the speed of the later stages of the adjustment, which depend mainly on the integral element. The shorter the correction lag, therefore, the greater must be the integral correction factor if rapid correction is to be obtained. Conversely, of course, the longer the correction lag the smaller must be the integral correction factor if overshooting and fluctuations are to be avoided. A

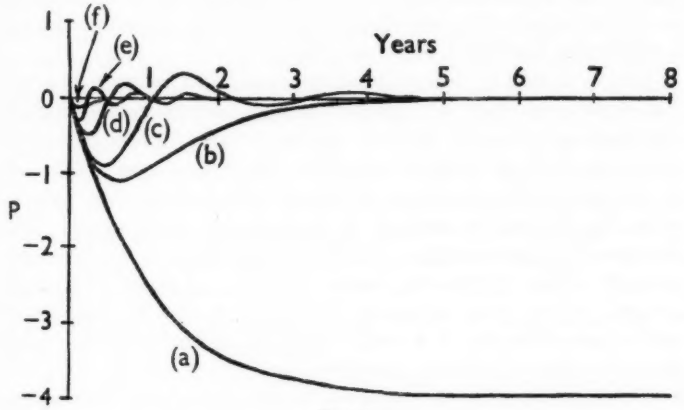

FIG. 8

Curve (*a*), no stabilisation policy.
Curve (*b*), $f_p = 0{\cdot}5$, $f_i = 0{\cdot}5$, $T = 6$ weeks.
Curve (*c*), $f_p = 0{\cdot}5$, $f_i = 2$, $T = 6$ weeks.
Curve (*d*), $f_p = 2$, $f_i = 8$, $T = 6$ weeks.
Curve (*e*), $f_p = 8$, $f_i = 32$, $T = 6$ weeks.
Curve (*f*), $f_p = 8$, $f_i = 32$, $f_d = 0{\cdot}25$, $T = 6$ weeks.

proportional correction factor of 0·5 plus an integral correction factor of 2 gives the response shown by Curve (*c*) of Fig. 8, while for Curve (*d*) the proportional and integral correction factors are 2 and 8, and for Curve (*e*) 8 and 32 respectively.

The fluctuations in the responses shown in Curves (*b*), (*c*) and (*d*) of Fig. 7 and in Curves (*c*), (*d*) and (*e*) of Fig. 8 could be eliminated by a sufficient reduction in the integral correction factor in each case; but only at the cost of increasing both the maximum size of the error and the time taken to correct it. A better method is available which not only eliminates the fluctuations, but also reduces both the maximum size of the error and the time taken to obtain complete correction.

6. *The Addition of Derivative Correction*

This method is to add to the potential policy demand, as determined by the proportional and integral relationships, a third element, proportional in magnitude and opposite in sign to the rate of change, or time derivative, of production. The effect of this is to make demand lower than it would otherwise have been whenever production is rising, and higher than it would otherwise have been whenever production is falling, so tending to check movements in either direction without affecting the final equilibrium position. The ratio of the magnitude of this element in the potential policy demand to the rate of change of production is called the derivative correction factor.

Curve (*e*) of Fig. 7 shows the response of production to a unit fall in demand when a proportional plus integral plus derivative stabilisation policy is applied, the correction factors being 8, 8 and 1 respectively, with a correction lag of 6 months. This may be compared with Curve (*d*) of Fig. 7, which shows the response when the derivative element of the policy is omitted, the other elements being unchanged. Similarly, the addition of a derivative element with a correction factor of 0·25 to a proportional plus integral policy with correction factors of 8 and 32 respectively and a correction lag of 6 weeks modifies the response from that shown by Curve (*e*) of Fig. 8 to that shown by Curve (*f*). It will be noticed that in order to maintain a suitable balance between the three elements in the policy when the length of the correction lag is reduced, it is necessary to reduce the derivative correction factor in about the same proportion as the time constant of the correction lag, whereas the integral correction factor had to be increased in about the same proportion.

The reader may have observed that the application of a derivative correction policy introduces into the system the same type of relationship as that postulated by the acceleration principle, but operating in the opposite direction, the additional policy demand being opposite in sign to the rate of change of production, whereas the additional investment demand resulting from the operation of the acceleration principle is of the same sign as the rate of change of production. This means that so far as its effect on system stability is concerned, the acceleration principle acts as a perverse or destabilising derivative correction element. The usefulness of the acceleration hypothesis has sometimes been questioned. But stated in the moderate form, that when production is rising entrepreneurs will want to invest at a

greater rate, and after a time will in fact invest at a greater rate, than they would have done if production had not been rising, and conversely in the case of falling production, there can hardly be any doubt that the principle is a valid one. It seems desirable, therefore, to investigate the effects of stabilisation policies when the basic multiplier model is modified by the inclusion of an acceleration relationship.

7. *Stabilisation of a Multiplier–Accelerator Model*

We may define the term potential acceleration demand as the increase in investment demand that would occur as a direct result of rising production if the rise were to continue long enough for investment demand to become completely adjusted to it (and conversely in the case of falling production), and the term acceleration coefficient as the ratio between the potential acceleration demand and the rate of change of production which causes it.[1] Since investment demand will not respond instantaneously to alterations in the rate of change of production, a time lag may be introduced by the hypothesis that the actual acceleration demand tends continuously to approach the potential acceleration demand at a rate proportional to the difference between them. The time constant of this lag is defined in the same way as in the case of the production and correction lags.

Curve (*a*) of Fig. 9 (drawn with a different production scale from that used in Figs. 3–8 because of the greater fluctuations obtained) shows the response of production to unit spontaneous fall in demand when there is a marginal leakage of 0·25, a production lag with a time constant of 3 months, an acceleration coefficient of 0·6 and an acceleration lag with a time constant of 1 year, and when there is no stabilisation policy. With these values an explosive cycle is generated,[2] the fall in production in the first phase of the cycle being about 14 times as great as the spontaneous fall in demand. The cycle would eventually be limited by non-linearities in the system, and would then persist within those limits.

[1] Defined in this way, the acceleration coefficient is also the ratio of the change in the desired stock of capital to the change in the annual rate of production and real income, or what might be called the marginal desired capital–income ratio.

[2] The system gives damped oscillations when the acceleration coefficient lies between 0 and 0·5, explosive oscillations when it lies between 0·5 and 1, and is explosive without oscillations when the acceleration coefficient is greater than 1. All these values would probably be raised if the production and acceleration lags were divided, as they no doubt should be, into a number of separate shorter lags (observation lags, decision lags, process lags, etc.), and if similar lags were introduced in the response of demand to changes in income.

The application of a stabilisation policy having a proportional correction factor of 2 and a correction lag with a time constant of 6 months would change the response to that shown by Curve (*b*) of Fig. 9, and the addition to this policy of an integral element with a correction factor of 2 would change the response to that shown by Curve (*c*). As might be expected, the effect of the acceleration relationship has been to increase both the magnitude and the duration of the fluctuations resulting from these policies. (These responses may be compared with those shown by Curve (*c*) of Fig. 3 and Curve (*c*) of Fig. 7.)

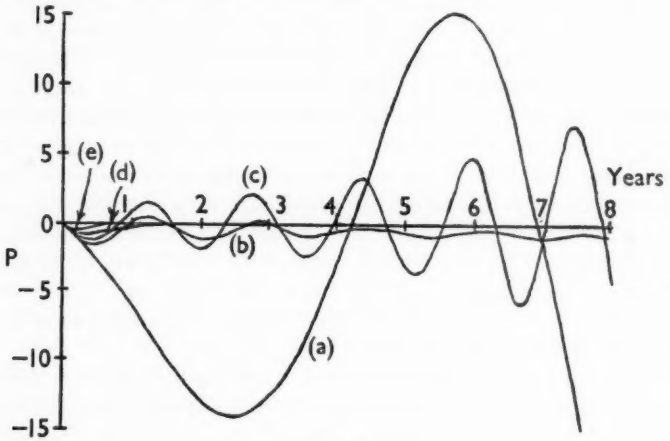

FIG. 9

Curve (*a*), no stabilisation policy.
Curve (*b*), $f_p = 2$, $T = 6$ months.
Curve (*c*), $f_p = 2$, $f_i = 2$, $T = 6$ months.
Curve (*d*), $f_p = 2$, $f_i = 2$, $f_d = 0{\cdot}55$, $T = 6$ months.
Curve (*e*), $f_p = 8$, $f_i = 8$, $f_d = 1{\cdot}3$, $T = 6$ months.

To eliminate these fluctuations it would be necessary to add a derivative element to stabilisation policy. A derivative correction factor of 0·3 would be needed to offset the acceleration coefficient of 0·6 (the derivative correction factor need be only half the size of the acceleration coefficient in this case, since the length of the correction lag is only half that of the acceleration lag), and an additional derivative correction factor of 0·25 would be needed to eliminate the fluctuations introduced by the proportional and integral elements of the stabilisation policy. Adding therefore a derivative element with a correction factor of 0·55 the response shown by Curve (*d*) of Fig. 9 is obtained. Finally, if the stabilisation policy was strengthened by multiplying each

correction factor (excepting that part of the derivative correction factor which was needed to offset the acceleration coefficient) by four, the response shown by Curve (*e*) would be obtained.

These results appear to indicate that if any stabilisation policy [1] is to be successful it must be made up of a suitable combination of proportional, integral and derivative elements. A strong proportional element is needed as the main basis of the policy, sufficient integral correction should be added to obtain complete correction of an error within a reasonable time and an element of derivative correction is required to overcome the oscillatory tendencies which may be introduced by the other two elements of the policy. If the system itself has a considerable tendency to oscillate as a result of a perverse derivative relationship inherent in it in the form of the acceleration principle, the integral element in the policy should be made very weak or avoided entirely, unless it can be accompanied by sufficient derivative correction to offset the destabilising effects of the perverse derivative relationship.

8. *Diagrammatic Representation of the System*

The system of relationships used in this Section can be represented by a block diagram of the type frequently employed in the analysis of closed-loop systems. In Fig. 10 the lines represent variables and the squares represent relationships between variables, the particular relationship in each case being indicated by the symbol within the square. D indicates differentiation with respect to time, $\int$ indicates integration with respect to time and L indicates the operation of a distributed time lag in the adjustment of one variable to another. Brackets indicate multiplication by the parameter inside the brackets. The arrows show the direction of causation or the sequence of responses. Circles represent addition or subtraction according to the algebraic signs shown in each case.

The simple multiplier model is represented by the single closed loop at the bottom of the diagram. Production P is related to demand E through the operation of the production time lag L_p, and in turn influences demand through the marginal propensity to spend $(1 - l)$, l being the marginal leakage. The

[1] The general principles of stabilisation have been illustrated here with particular reference to aggregate production in a closed economy, but they are of quite general applicability. They could equally well be used, for example, in investigating the stability of adjustments in international trade, or the problems involved in commodity price stabilisation schemes.

loop immediately above this represents the acceleration principle, which adds another component to demand equal to the rate change of production $\frac{dP}{dt}$ multiplied by the acceleration coefficient k and subject to the acceleration time lag L_a.

The three loops at the top of the diagram represent the three types of stabilisation policy. The error in production ϵ is obtained by subtracting the desired production P_d from the actual production. (In the illustrations given in this article all variables are measured as deviations from their values in an initial equilibrium position with production at the desired level.

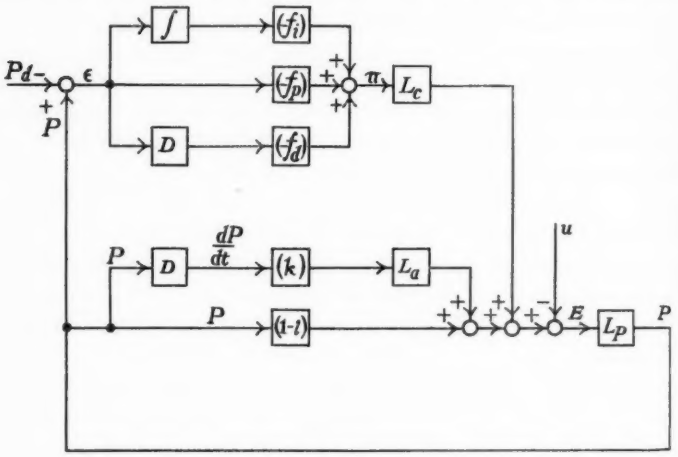

FIG. 10

P_d is therefore zero and ϵ equals P.) The error, the integral of the error and the derivative of the error are multiplied by $-f_p$, $-f_i$ and $-f_d$ respectively, f_p being the proportional correction factor, f_i the integral correction factor and f_d the derivative correction factor. The potential policy demand π is the sum of these products, and subject to the operation of the correction time lag L_c determines the actual policy demand which is added to the other components of aggregate demand.

The variable u represents a disturbance to the system, assumed throughout this article to take the form of a spontaneous fall in demand of one unit at time zero. Other forms of disturbance could, of course, be assumed and their effects investigated, and disturbances could be applied to other variables instead of, or in addition to, demand.

Section II

A Model with Flexible Prices

1. *The Relationship between Prices and Production*

If changes in the quantity and productivity of the factors of production are ignored, the change in the average level of product prices which results from a given change in the aggregate level of production will be the sum of two components. First, if the prices of the services of the factors of production (which will be referred to for brevity as factor prices) are absolutely rigid, product prices, tending to move with marginal costs, will vary directly with the level of production. This component of the change in product prices is probably not very large, and will be neglected in the following analysis.

Second, if factor prices have some degree of flexibility, there will be changes in product prices resulting from the changes which take place in factor prices. Even with flexible factor prices, there will be some level of production and employment which, given the bargaining powers of the different groups in the economy, will just result in the average level of factor prices remaining constant, this level of production and employment being lower, the stronger and more aggressive the organisation of the factors of production. If aggregate real demand is high enough to make a higher level of production than this profitable, entrepreneurs will be more anxious to obtain (and to retain) the services of labour and other factors of production and so less inclined to resist demands for higher wages and other factor rewards. Factor prices will therefore rise. The level of demand being high, the rising costs will be passed on in the form of higher product prices. Factor and product prices will continue to rise in this way so long as the high level of demand and production is maintained, the rate at which they rise being greater, the higher the level of demand and production.

Conversely, if aggregate real demand is so low that production at the level which would result in constant factor prices is unprofitable, entrepreneurs will be more anxious to force down factor prices, while at the lower level of employment factors will be less able to press for higher rewards and more inclined to accept lower rewards. Factor prices will therefore gradually move downwards, and the level of demand being low, the falling costs will be reflected in falling product prices. Prices will continue to fall in this way so long as demand and production remain

low, the rate of fall being greater, the lower the level of demand and production.

We may therefore postulate a relationship between the level of production and the rate of change of factor prices, which is probably of the form shown in Fig. 11, the fairly sharp bend in the curve where it passes through zero rate of change of prices being the result of the greater rigidity of factor prices in the downward than in the upward direction. The relationship between the level of production and the rate of change of product prices will be of a similar shape if productivity is constant. In

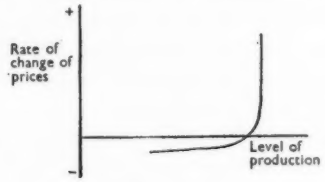

FIG. 11

spite of the marked curvature of the relationship, linearity may be assumed as an approximation for small changes in production. If the desired level of production is now taken to be that which would result in a constant level of product prices, we may say that the rate of change of product prices will be approximately proportional to the deviation of production from this level, *i.e.*, to the error in production, this approximation being better, the smaller the fluctuations which occur in production.

2. *Additional Relationships when Prices and Interest Rates are Flexible*

The model used in Section I can now be extended by dropping the assumption of constant prices and interest rates. The complete model is shown diagrammatically in Fig. 12, which is the same as Fig. 10 excepting for the addition of the group of relationships in the centre of the diagram. Four additional sequences can be distinguished.

(i) A deviation of production from the desired level will be accompanied by a change in the number of transactions and so a change in the amount of money needed for conducting them, even if prices are rigid. If the quantity of money is less than perfectly elastic, this will cause interest rates, i, to change in the same direction [1] as the error in production. As a result of this

[1] Provided that the liquidity preference schedule does not shift.

change in interest rates there will be a potential change [1] in investment demand and production, in the opposite direction to the error in production and (assuming linearity throughout) proportional to the error. This sequence of responses is represented in Fig. 12 by the closed loop of relationships (a), $(-b)$,

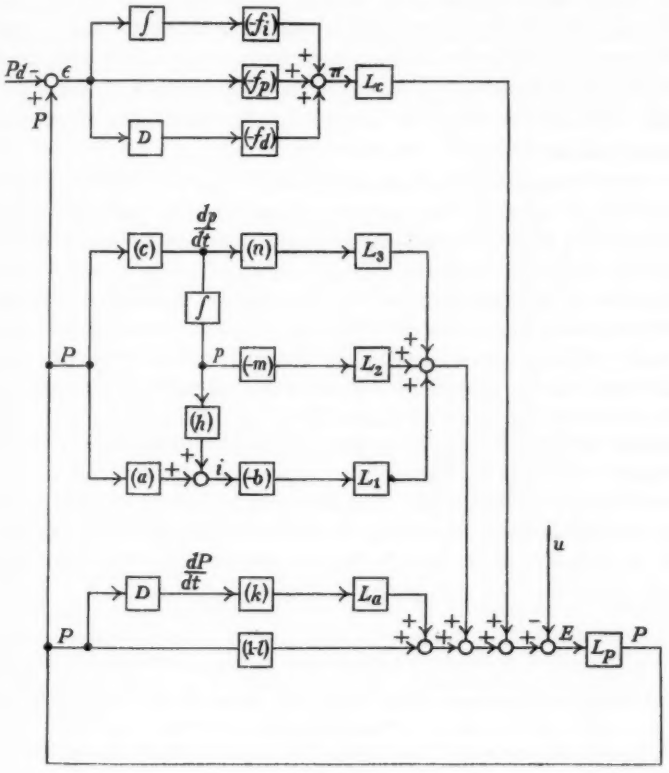

FIG. 12

L_1, L_P, giving a potential feed-back of $-abP$ and so acting as a regulating mechanism of the proportional type.

(ii) If prices, p, are flexible, the error in production will also cause prices to change at a rate proportional to the error. The amount by which prices have changed at any given time, being identical with the time integral of their rate of change up to that time, will be proportional to the time integral of the error. This

[1] It will be remembered that by a potential change in any variable we mean the change that would take place if no time lag was involved.

change in prices will cause a further change in the amount of money needed for conducting transactions, in addition to that caused by the change in the number of transactions conducted. There will therefore be an additional change in interest rates [1] in the same direction as the error, causing a further potential change in investment demand and production in the opposite direction to the error and proportional to the time integral of the error. This sequence of responses thus operates as a regulating mechanism of the integral type. The sequence is represented in Fig. 12 by the relationships (c), $\int$, (h), $(-b)$, L_1, L_P, which give a potential feed-back of $-chb\int P$.

(iii) Professor Pigou has pointed out [2] that even if the liquidity preference schedule was infinitely elastic at the prevailing level of interest rates, so that interest rates failed to move with a change in production and prices, a change in the level of prices would still influence demand by changing the real value of money balances and so the amount of saving at given incomes and interest rates. This potential change in demand would be in the same direction as the change in the real value of money balances, and therefore in the opposite direction to the change in prices. For small changes it would be approximately proportional to the change in prices and therefore proportional to the time integral of the error in production. The Pigou effect is therefore equivalent to another integral regulating mechanism inherent in the economy. It is represented in Fig. 12 by the closed loop of relationships (c), $\int$, $(-m)$, L_2, L_P, giving a potential feed-back of $-cm\int P$.

[1] The device of considering the quantity effects and price effects separately and then adding them can be justified as follows: Denoting interest rates, production and prices, measured from a zero base, by i_0, P_0 and p_0 respectively, and deviations from their initial equilibrium values by i, P and p, we have

$$i_0 = F(P_0, p_0)$$

Expanding this expression in a Taylor series and dropping all but the first two terms gives

$$\Delta i_0 = \frac{\partial i_0}{\partial P_0}\Delta P_0 + \frac{\partial i_0}{\partial p_0}\Delta p_0$$

or

$$i = \frac{\partial i}{\partial P}P + \frac{\partial i}{\partial p}p$$

as an approximation valid for small changes. For small changes $\frac{\partial i}{\partial P}$ and $\frac{\partial i}{\partial p}$ may also be considered constant, so we may write

$$i = aP + hp$$

which is the relationship shown in Fig. 12. Similar approximations are involved in considering the change in aggregate demand as the sum of a number of separate components.

[2] "The Classical Stationary State," ECONOMIC JOURNAL, December 1943, and "Economic Progress in a Stable Environment," *Economica*, August 1947.

(iv) Demand is also likely to be influenced by the rate at which prices are changing, or have been changing in the recent past, as distinct from the amount by which they have changed, this influence on demand being greater, the greater the rate of change of prices. Since the rate of change of prices in turn depends on the error in production, the potential change in demand and production resulting from these relationships will be approximately proportional to the error in production. This sequence of responses is represented in Fig. 12 by the relationships (c), (n), L_3, L_P, the potential feed-back therefore being cnP. The direction of this change in demand will depend on expectations about future price changes. If changing prices induce expectations of further changes in the same direction, as will probably be the case after fairly rapid and prolonged movements, demand will change in the same direction as the changing prices. That is, n will be positive, and there will be a positive feed-back tending to intensify the error, the response of demand to changing prices thus acting as a perverse or destabilising mechanism of the proportional type. If, on the other hand, there is confidence that any movement of prices away from the level ruling in the recent past will soon be reversed, demand is likely to change in the opposite direction to the changing prices. n will then be negative, and the response of demand to changing prices will act as a normal proportional regulating mechanism.

3. *Inherent Regulation of the System*

Some examples will be given below to illustrate the stability of this system under different conditions of price flexibility and with different expectations concerning future price changes. As before, it will be assumed that the marginal leakage is 0·25 and that the time constant of the production lag is 3 months. The time constants of the lags L_1, L_2 and L_3 will be taken as 6 months. The acceleration relationship will be omitted (by putting $k = 0$) so that the effects of price flexibility can be seen by comparing the response of the system with that of the multiplier model.

In deciding upon suitable values for the remaining parameters it will be convenient to think of the units being such that in the initial equilibrium position production is 100 units per year, the price index also being 100. Changes can be expressed in either absolute or percentage terms with negligible error so long as prices and production do not move too far from their initial equilibrium values. The product of the parameters a and b will be given the value 0·2, which is equivalent to assuming that if

production were to fall by 1% or 1 unit, prices remaining constant, interest rates would fall sufficiently to stimulate investment demand by 0·2 of a unit. The product of the parameters h and b must be a little greater than this, since if the price level were to fall by 1%, production remaining constant, there would be the

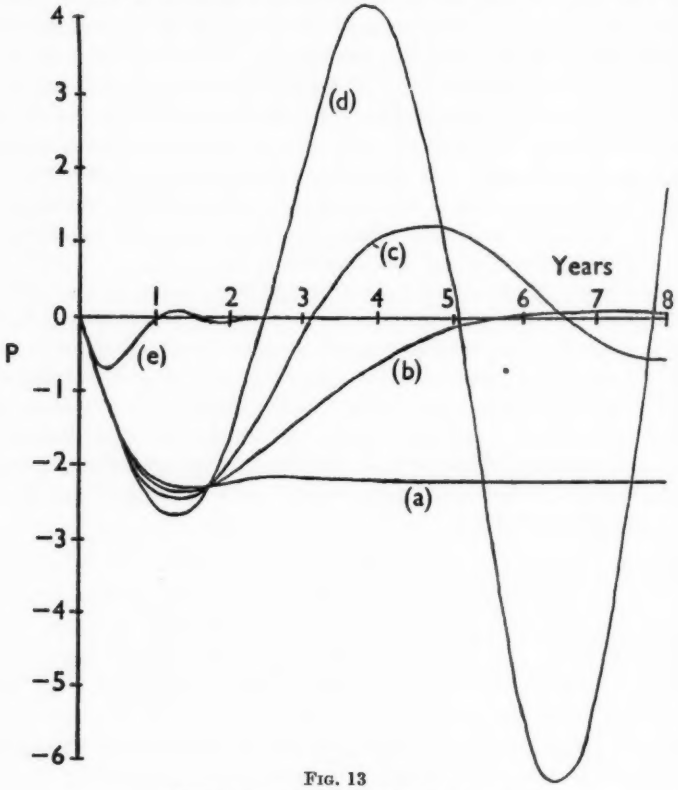

FIG. 13

Curve (*a*), zero price flexibility ($c = 0$).
Curve (*b*), $c = 0{\cdot}5$, $n = 0{\cdot}2$.
Curve (*c*), $c = 1$, $n = 0{\cdot}2$.
Curve (*d*), $c = 2$, $n = 0{\cdot}2$.
Curve (*e*), with stabilisation policy.

same reduction in the demand for money for transactions purposes; but the real value of money balances would be slightly increased so that the fall in interest rates would be rather greater. The product hb will therefore be given the value 0·25. m will be taken as 0·05, equivalent to assuming that a 1% fall in the price level would stimulate demand by 0·05% through its effect in

increasing the real value of money balances, if there was no change in interest rates.

The responses shown in Fig. 13 have been worked out on the assumption that n has the value 0·2. This means, for example, that if prices are falling at the rate of 1% per year, demand will tend to be 0·2 of 1% lower that it would have been if prices had been constant. Given these assumptions, Curve (*a*) shows the response of production to unit fall in demand when there is zero price flexibility ($c = 0$). This response is similar to that of the multiplier model (Curves (*a*) of Fig. 3–8); but the final error is less owing to the stabilising effects of the flexible interest rates.

Curve (*b*) shows the response when $c = 0{\cdot}5$, *i.e.*, when for each 1% error in production prices change at the rate of 0·5% per year. The two integral regulating mechanisms now come into play, operating through interest rates and the Pigou effect respectively, so in the final equilibrium position the error is completely corrected. The total strength of the proportional regulating mechanisms is, however, reduced by the perverse effect of the response of demand to changing prices, with the result that the magnitude of the error in the early stages of the adjustment is slightly greater than in the case of zero price flexibility.

When $c = 1$ the response is that shown by Curve (*c*) and when $c = 2$ it becomes that shown by Curve (*d*). The strength of the integral regulating mechanisms increases with the increasing degree of price flexibility, while the total strength of the proportional regulating mechanisms decreases as demand responds perversely to the more rapid rate of change of prices, and both these effects tend to introduce fluctuations when price flexibility is increased beyond a certain point. When price expectations operate in this way, therefore, the system has fairly satisfactory self-regulating properties when prices are moderately flexible; but becomes unstable when there is a high degree of price flexibility.

If changing prices induce expectations of future changes in the reverse direction, n being given the value $-0{\cdot}2$, the response of the system when there are different degrees of price flexibility is as shown in Fig. 14. Curves (*a*), (*b*), (*c*) and (*d*) have been worked out for values of c of 0, 0·5, 1 and 2 respectively, and so can be compared with the equivalent curves in Fig. 13. In this case the response of demand to changing prices provides a normal proportional regulating mechanism which increases in strength with the increasing degree of price flexibility. This increasing

proportional regulation limits the fluctuations which would otherwise be introduced as a result of integral mechanisms, the strength of which also increases with increasing price flexibility, and at the same time increases the speed with which the error is corrected in the early stages of the adjustment. We may conclude that the self-regulating properties of the system will be considerably

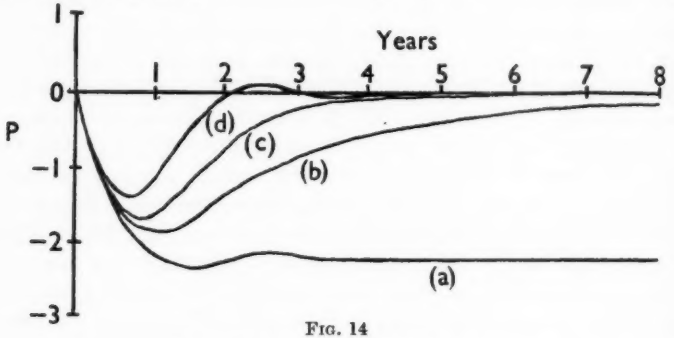

FIG. 14

Curve (*a*), zero price flexibility ($c = 0$).
Curve (*b*), $c = 0{\cdot}5$, $n = -0{\cdot}2$.
Curve (*c*), $c = 1$, $n = -0{\cdot}2$.
Curve (*d*), $c = 2$, $n = -0{\cdot}2$.

improved if there is confidence that any movement of prices away from the level ruling in the recent past will soon be reversed, and that if such confidence is sufficiently great the self-regulating properties will also be better, the higher the degree of price flexibility in the system.

4. *Stabilisation of the System*

If a stabilisation policy is applied to the system, the values of the correction factors required to produce any particular response will depend on the values of the parameters in the system. Examples of the values of correction factors which would result in the response shown by Curve (*e*) of Fig. 13 if the time constant of the correction lag was 6 months are given in the following table.

Proposals have sometimes been made for improving the stability of the economic system by "building in" additional regulating mechanisms. In the British Government's White Paper on Employment Policy [1] reference is made to a scheme for influencing consumption spending by varying the rates of social-insurance contributions above or below the standard rates by

[1] Cmd. 6527, 1944, paragraphs 68–71 and Appendix II.

Response of unstabilised system.	Stabilisation policy required to produce the response shown by Curve (*e*) of Fig. 13.		
	Proportional correction factor.	Integral correction factor.	Derivative correction factor.
Curve (*a*), Fig. 13 . . .	1·8	2·0	0·2
Curve (*b*), Fig. 13 . . .	1·9	1·85	0·2
Curve (*c*), Fig. 13 . . .	2·0	1·7	0·2
Curve (*d*), Fig. 13 . . .	2·2	1·4	0·2
Curve (*b*), Fig. 14 . . .	1·7	1·85	0·2
Curve (*c*), Fig. 14 . . .	1·6	1·7	0·2
Curve (*d*), Fig. 14 . . .	1·4	1·4	0·2
Curve (*a*), Figs. 3–8 . . .	2·0	2·0	0·2
Curve (*a*), Fig. 9 . . .	2·0	2·0	0·5

amounts depending on the percentage by which the actual employment is above or below the average percentage over a period of years. On the basis of the figures given in the White Paper to illustrate how the scheme might operate, this would introduce a proportional regulating mechanism with a correction factor of about 0·2.[1] If schemes of this sort could be administered successfully they would undoubtedly improve the stability of the system considerably, and would probably be more effective than attempts to forecast conditions a year or more ahead and adjust an annual budget accordingly.

Monetary policy would be a more convenient instrument for stabilising an economy. Some may doubt whether it is a sufficiently powerful instrument; but if the right type of stabilisation policy is being applied continuously, comparatively small correcting forces are sufficient to hold the system near the desired position once that position has been attained. It is quite likely, therefore, that a monetary policy based on the principles of automatic regulating systems would be adequate to deal with all but the most severe disturbances to the economic system.

[1] Professor Meade has suggested a scheme, operating through special monthly taxes and credits related to the level of employment, which would have similar effects. With the scales of taxes and credits suggested by him the proportional correction factor would be about 0·4. The cumulative expansion and contraction of the quantity of money resulting from the proposed method of financing the scheme would also introduce an integral correction element. Professor Meade must have been aware that there would be some disadvantage in having too much integral correction, since he recommended that this effect should be partially offset through appropriate action by the central bank. Cf. J. E. Meade, *Consumers' Credits and Unemployment*, Oxford University Press, London, 1938.

Mathematical Appendix

1. *Symbols Used*

P aggregate production, in units per year, measured from the initial equilibrium value.

E aggregate demand, in units per year, measured from the initial equilibrium value.

α the speed of response of production to changes in demand. The time constant of the production lag is $\frac{1}{\alpha}$ years.

D the differential operator $\frac{d}{dt}$.

t time in years.

l the marginal leakage.

u unit step function, equal to zero when $t \leqslant 0$ and to unity when $t > 0$.

β the speed of response of policy demand to changes in potential policy demand. The time constant of the correction lag is $\frac{1}{\beta}$ years.

f_p proportional correction factor.

f_i integral correction factor.

f_d derivative correction factor.

k acceleration coefficient.

κ speed of response of demand to changes in the rate of change of production. The time constant of the acceleration lag is $\frac{1}{\kappa}$ years.

If the rate of interest is denoted by i, the price level by p, and potential demand by E', the parameters of the price relationships shown in Fig. 12 are defined as :

$$a = \frac{\partial i}{\partial P} \qquad b = -\frac{\partial E'}{\partial i} \qquad c = \frac{\partial\left(\frac{dp}{dt}\right)}{\partial P}$$

$$h = \frac{\partial i}{\partial p} \qquad m = -\frac{\partial E'}{\partial p} \qquad n = \frac{\partial E'}{\partial\left(\frac{dp}{dt}\right)}$$

2. *Distributed Time Lags*

A single distributed time lag in the response of production to changes in demand is represented by the equation

$$DP = -\alpha(P - E) \quad . \quad . \quad . \quad . \quad (1)$$

from which

$$P = \frac{\alpha}{D + \alpha} E \quad . \quad . \quad . \quad . \quad . \quad (2)$$

Similarly, the value of any variable which responds with a distributed time lag to changes in another is obtained by multiplying the value which that variable would have if there were no time lag by an operator of the form $\frac{\alpha}{D+\alpha}$, where $\frac{1}{\alpha}$ is the time constant of the lag. This rule will be used whenever a time lag is introduced.

If, from equilibrium, demand were to fall by one unit at time $t = 0$, we may substitute $E = -1$ when $t > 0$, giving

$$(D + \alpha)P = -\alpha \text{ when } t > 0 \quad . \quad . \quad . \quad (3)$$

with the initial condition

$$P = 0 \text{ when } t = 0 \quad . \quad . \quad . \quad . \quad . \quad (4)$$

since immediately after the change production will still be at its initial value.

The solution [1] of equations (3) and (4) is

$$P = -(1 - e^{-\alpha t})$$

which is plotted in Fig. 1 and Curve (*a*) of Fig. 2 for $\alpha = 4$.

If there were two consecutive time lags in the response of production to demand, the time constant of each being $\frac{1}{8}$ year, equation (2) would become

$$P = \left(\frac{8}{D+8}\right)^2 E \quad . \quad . \quad . \quad . \quad . \quad (2a)$$

After the unit fall in demand, this gives

$$(D + 8)^2 P = -8^2 \text{ when } t > 0 \quad . \quad . \quad . \quad (3a)$$

with initial conditions

$$P = 0, DP = 0 \text{ when } t = 0 \quad . \quad . \quad . \quad (4a)$$

The solution is

$$P = -[1 - (1 + 8t)e^{-8t}]$$

which is plotted as Curve (*b*) of Fig. 2.

With three consecutive time lags each having a time constant

[1] For methods of solving ordinary linear differential equations with constant coefficients see Piaggio, *Differential Equations*, G. Bell & Sons, Ltd., London, 1949, Chapter 3. For equations of order higher than the second a considerable saving of labour is obtained by using the Laplace Transformation instead of the classical methods of solution. See Carslaw and Jaeger, *Operational Methods in Applied Mathematics*, Oxford University Press, Oxford, 1948, and Gardner and Barnes, *Transients in Linear Systems*, John Wiley & Sons, New York, 1942.

of $\frac{1}{12}$ year the equations for the response to unit fall in demand would be

$$(D + 12)^3P = -12^3 \text{ when } t > 0 \quad . \quad . \quad (3b)$$

$$P = 0,\ DP = 0,\ D^2P = 0 \text{ when } t = 0 \quad . \quad . \quad (4b)$$

The solution is

$$P = -[1 - (1 + 12t + 72t^2)e^{-12t}]$$

which is plotted as Curve (*c*) of Fig. 2.

3. *The Multiplier Model*

The response of demand to changes in production or real income is represented by the equation

$$E = (1 - l)P - u \quad . \quad . \quad . \quad . \quad . \quad (5)$$

u being the spontaneous change in demand occurring at time $t = 0$. Substituting equation (5) in equation (1) and rearranging, we obtain

$$(D + \alpha l)P = -\alpha u \quad . \quad . \quad . \quad . \quad . \quad (6)$$

After the initial change in demand this becomes

$$(D + \alpha l)P = -\alpha \text{ when } t > 0 \quad . \quad . \quad . \quad (7)$$

with the initial condition

$$P = 0 \text{ when } t = 0 \quad . \quad . \quad . \quad . \quad . \quad (8)$$

since immediately after the change production will still be at its initial equilibrium value.

The solution of equations (7) and (8) for $\alpha = 4$ and $l = 0{\cdot}25$ is

$$P = -4(1 - e^{-t})$$

which is plotted as Curves (*a*) of Figs. 3–9 inclusive.

4. *Proportional Stabilisation Policy*

The potential policy demand is $-f_pP$, giving an actual policy demand of $-\frac{\beta f_p}{D + \beta}P$. Adding this to the demand shown in equation (5) we obtain

$$E = (1 - l)P - \frac{\beta f_p}{D + \beta}P - u \quad . \quad . \quad . \quad (5a)$$

Substituting this expression in equation (1) and rearranging gives

$$[D^2 + (\alpha l + \beta)D + \alpha\beta(l + f_p)]P = (-\alpha D - \alpha\beta)u \quad (6a)$$

After the initial change in demand u equals unity and the derivatives of u are zero, so that

$$[D^2 + (\alpha l + \beta)D + \alpha\beta(l + f_p)]P = -\alpha\beta \text{ when } t > 0 \quad (7a)$$

the initial conditions being

$$P = 0,\ DP = -\alpha \text{ when } t = 0 \quad . \quad . \quad (8a)$$

The solutions of equations (7*a*) and (8*a*) for different values of f_p and β, α and l having the same values as before, are given in the following table :

f_p.	β.	P.	Curve.
0·5	2	$-1{\cdot}33 - 1{\cdot}69e^{-1{\cdot}5t}\sin(111°\ t - 52°)$	Fig. 3 (*b*)
2	2	$-0{\cdot}44 - 0{\cdot}95e^{-1{\cdot}5t}\sin(227°\ t - 28°)$	Fig. 3 (*c*)
0·5	8	$-1{\cdot}33 - 1{\cdot}69e^{-4{\cdot}5t}\sin(111°\ t - 128°)$	Fig. 4 (*b*)
2	8	$-0{\cdot}44 - 0{\cdot}52e^{-4{\cdot}5t}\sin(412°\ t - 58°)$	Fig. 4 (*c*)

5. *Integral Stabilisation Policy*

With an integral stabilisation policy the actual policy demand is $-\frac{\beta f_i}{D + \beta}\int P dt$. Adding this to equation (5), differentiating with respect to time, then substituting in equation (1) and rearranging the terms, we obtain

$$[D^3 + (\alpha l + \beta)D^2 + \alpha\beta l D + \alpha\beta f_i]P = (-\alpha D^2 - \alpha\beta D)u \quad (6b)$$

After the initial change in demand this becomes

$$[D^3 + (\alpha l + \beta)D^2 + \alpha\beta l D + \alpha\beta f_i]P = 0 \text{ when } t > 0 \quad . \quad (7b)$$

with initial conditions [1]

$$P = 0,\ DP = -\alpha,\ D^2P = \alpha^2 l \text{ when } t = 0 \quad . \quad (8b)$$

[1] The initial conditions are not intuitively obvious when the equations are of the third or higher order. The following rules, derived from A. Porter, *An Introduction to Servomechanisms*, Methuen & Co., Ltd., London, 1950, pp. 50–3, to which the reader is referred for their justification, lay down a simple procedure for finding the initial conditions of the system in these cases.

(i) Integrate the equation with respect to time between the limits $t = -0$ and $t = +0$. Terms containing integrals of P and u between these limits are equal to zero and may be omitted.

(ii) Repeat the integrations until only the term in P remains. This gives the value of P when $t = 0$.

(iii) Substitute this value of P in the preceding equation, setting u equal to 1 and any derivatives of u equal to zero. This gives the value of DP when $t = 0$.

(iv) Repeat the substitutions until all the initial conditions have been obtained.

The solutions of equations (7*b*) and (8*b*) for different values of f_i and β are given in the table below :

f_i.	β.	P.	Curve.
0·5	2	$0{\cdot}37e^{-2{\cdot}80t} - 2{\cdot}55e^{-0{\cdot}10t}\sin(68{\cdot}3°\ t + 8{\cdot}3°)$	Fig. 5 (*b*)
2	2	$0{\cdot}33e^{-2{\cdot}65t} - 1{\cdot}34e^{0{\cdot}33t}\sin(118°\ t + 14°)$	Fig. 5 (*c*)
0·5	8	$0{\cdot}02e^{-8{\cdot}27t} - 2{\cdot}88e^{-0{\cdot}37t}\sin(77{\cdot}0°\ t + 0{\cdot}34°)$	Fig. 6 (*b*)
2	8	$0{\cdot}04e^{-8{\cdot}91t} - 1{\cdot}35e^{-0{\cdot}05t}\sin(154°\ t + 1{\cdot}8°)$	Fig. 6 (*c*)

6. *Proportional plus Integral Stabilisation Policy*

The actual policy demand in this case is $-\frac{\beta}{D+\beta}(f_pP + f_i\int Pdt)$. Following the same procedure as in the previous example, we obtain the equations

$$[D^3 + (\alpha l + \beta)D^2 + \alpha\beta(l + f_p)D + \alpha\beta f_i]P = 0 \quad \text{when } t > 0 \quad (7c)$$

$$P = 0,\ DP = -\alpha,\ D^2P = \alpha^2 l \quad \text{when } t = 0 \quad (8c)$$

Solutions for different values of f_p, f_i and β are :

f_p.	f_i.	f_d.	P.	Curve.
0·5	0·5	2	$-1{\cdot}33e^{-t} - 2{\cdot}67e^{-t}\sin(99{\cdot}4°\ t - 30°)$	Fig. 7 (*b*)
2	2	2	$-0{\cdot}27e^{-t} - 1{\cdot}07e^{-t}\sin(221°\ t - 15°)$	Fig. 7 (*c*)
8	8	2	$-0{\cdot}06e^{-t} - 0{\cdot}51e^{-t}\sin(455°\ t - 7°)$	Fig. 7 (*d*)
0·5	0·5	8	$-3{\cdot}11e^{-t} + (3{\cdot}11 + 5{\cdot}33t)e^{-4t}$	Fig. 8 (*b*)
0·5	2	8	$-0{\cdot}11e^{-6{\cdot}86t} - 1{\cdot}62e^{-1{\cdot}07t}\sin(164°\ t - 4°)$	Fig. 8 (*c*)
2	8	8	$-0{\cdot}22e^{-4{\cdot}93t} - 0{\cdot}70e^{-2{\cdot}03t}\sin(396°\ t - 18°)$	Fig. 8 (*d*)
8	32	8	$-0{\cdot}06e^{-4{\cdot}2t} - 0{\cdot}27e^{-2{\cdot}4t}\sin(880°\ t - 13°)$	Fig. 8 (*e*)

7. *Proportional plus Integral plus Derivative Stabilisation Policy*

The actual policy demand becomes

$$-\frac{\beta}{D+\beta}(f_pP + f_i\int Pdt + f_dDP)$$

Applying these rules to equation (7*b*) we obtain :

1st integration $D^3P + (\alpha l + \beta)DP + \alpha\beta lP = -\alpha Du - \alpha\beta u$ . . . (*a*)

2nd integration $DP + (\alpha l + \beta)P = -\alpha u$ . . . . . (*b*)

3rd integration $P = 0$ . . . . . (*c*)

Substituting equation (*c*) in (*b*) and setting u equal to unity,

$$DP = -\alpha \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (d)$$

Substituting (*c*) and (*d*) in (*a*) and setting u equal to unity and Du equal to zero,

$$D^3P - \alpha(\alpha l + \beta) = -\alpha\beta$$

or $$D^3P = \alpha^2 l \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (e)$$

Equations (*c*), (*d*) and (*e*) give the initial conditions of the system.

Following the same procedure as before we obtain the equations

$$[D^3 + (\alpha l + \beta + \alpha\beta f_d)D^2 + \alpha\beta(l + f_p)D + \alpha\beta f_i]P = 0 \quad \text{when } t > 0 \quad (7d)$$

$$P = 0,\ DP = -\alpha,\ D^2P = \alpha^2(l + \beta f_d) \quad \text{when } t = 0 \quad (8d)$$

Solutions for various values of f_p, f_i, f_d and β are :

f_p.	f_i.	f_d.	β.	P.	Curve.
8	8	1	2	$-0{\cdot}08e^{-1{\cdot}18t} - 0{\cdot}68e^{-4{\cdot}91t}\sin(315°\ t - 6°)$	Fig. 7 (*e*)
8	32	0·25	8	$-0{\cdot}07e^{-5{\cdot}02t} - 0{\cdot}31e^{-5{\cdot}99t}\sin(741°\ t - 13°)$	Fig. 8 (*f*)

8. *The Multiplier–Accelerator Model*

The acceleration demand is $\dfrac{\kappa k}{D + \kappa} DP$. Adding this to the demand shown in equation (5) and following the usual procedure, the equations of the system are found to be

$$[D^2 + (\alpha l + \kappa - \alpha\kappa k)D + \alpha\kappa l]P = -\alpha\kappa \text{ when } t > 0 \quad (7e)$$

$$P = 0,\ DP = -\alpha \quad \text{when } t = 0 \quad (8e)$$

With $\alpha = 4$, $l = 0{\cdot}25$, $\kappa = 1$ and $k = 0{\cdot}6$ the solution, plotted as Curve (*a*) of Fig. 9, is

$$P = -4{\cdot}00 - 6{\cdot}32\, e^{0{\cdot}2t}\sin(56°\ t - 39°)$$

When a proportional stabilisation policy is applied the equations become

$$[D^3 + (\alpha l + \beta + \kappa - \alpha\kappa k)D^2 + (\alpha\beta l + \alpha\kappa l + \beta\kappa + \alpha\beta f_p - \alpha\beta\kappa k)D + \alpha\beta\kappa(l + f_p)]P = -\alpha\beta\kappa \text{ when } t > 0 \quad (7f)$$

$$P = 0,\ DP = -\alpha,\ D^2P = \alpha^2(l - \kappa k) \text{ when } t = 0 \quad (8f)$$

With $f_p = 2$, $\beta = 2$ and the other parameters retaining their previous values the solution, plotted as Curve (*b*) of Fig. 9, is

$$P = -0{\cdot}44 - 0{\cdot}025\, e^{-1{\cdot}15t} - 1{\cdot}10\, e^{-0{\cdot}225t}\sin(227°\ t - 25°)$$

With a proportional plus integral stabilisation policy the equations of the system are

$$[D^4 + (\alpha l + \beta + \kappa - \alpha\kappa k)D^3 + (\alpha\beta l + \alpha\kappa l + \beta\kappa + \alpha\beta f_p - \alpha\beta\kappa k)D^2 + (\alpha\beta\kappa l + \alpha\beta\kappa f_p + \alpha\beta f_i)D + \alpha\beta\kappa f_i]P = 0 \quad \text{when } t > 0 \quad (7g)$$

$$\left.\begin{aligned} &P = 0,\ DP = -\alpha,\ D^2P = \alpha^2(l - \kappa k) \\ &D^3P = \alpha^2(\beta f_p + \kappa^2 k) - \alpha^3(l - \kappa k)^2 \end{aligned}\right\} \text{when } t = 0 \quad (8g)$$

With $f_i = 2$, the other parameters retaining their previous values, the solution, plotted as Curve (*c*) of Fig. 9, is

$$P = -0{\cdot}07\, e^{-1{\cdot}43t} - 0{\cdot}13\, e^{-0{\cdot}69t} - 1{\cdot}08\, e^{0{\cdot}26t} \sin (231^\circ\, t - 11^\circ)$$

When a proportional plus integral plus derivative stabilisation policy is applied the equations of the system become

$$[D^4 + (\alpha l + \beta + \kappa + \alpha\beta f_d - \alpha\kappa k)D^3 + (\alpha\beta l + \alpha\kappa l + \beta\kappa + \alpha\beta f_p + \alpha\beta\kappa f_d - \alpha\beta\kappa k)D^2 + (\alpha\beta\kappa l + \alpha\beta\kappa f_p + \alpha\beta f_i)D + \alpha\beta\kappa f_i]P = 0 \text{ when } t > 0 \quad (7h)$$

$$\left.\begin{aligned} &P = 0,\ DP = -\alpha,\ D^2P = \alpha^2(l + \beta f_d - \kappa k) \\ &D^3P = \alpha^2(\beta f_p + \kappa^2 k - \beta^2 f_d) - \alpha^3(l^2 - 2\kappa k l \\ &\qquad + \kappa^2 k^2 + 2\beta f_d l + \beta^2 f_d{}^2 - 2\beta\kappa f_d k) \end{aligned}\right\} \text{when t} = 0 \quad (8h)$$

With $f_d = 0{\cdot}55$, the other parameters retaining their previous values, the solution, plotted as Curve (*d*) of Fig. 9, is

$$P = -0{\cdot}11\, e^{-0{\cdot}74t} + 0{\cdot}07\, e^{-2{\cdot}17t} - 1{\cdot}40\, e^{-1{\cdot}55t} \sin (158^\circ\, t - 2^\circ)$$

With $f_p = 8$, $f_i = 8$, $f_d = 1{\cdot}3$ and the other parameters as before, the solution, plotted as Curve (*e*) of Fig. 9, is

$$P = -0{\cdot}02\, e^{-0{\cdot}87t} - 0{\cdot}04\, e^{-1{\cdot}44t} - 0{\cdot}73\, e^{-0{\cdot}48t} \sin (300^\circ\, t - 5^\circ)$$

9. *The Model with Flexible Prices and Interest Rates*

If the time constants of the lags L_1, L_2 and L_3 in Fig. 12 are assumed for simplicity to be the same as the time constant of the correction lag, the total demand resulting from the system (excluding the acceleration relationship) is

$$E = (1 - l)P - \frac{\beta}{D + \beta}\left[(ab - cn + f_p)P + (cm + chb + f_i)\int P dt + f_d DP\right] - u$$

Substituting this expression in equation (1) and carrying out the same operations as in previous examples, we obtain the following equations of the system :

$$[D^3 + (\alpha l + \beta + \alpha\beta f_d)D^2 + \alpha\beta(l + ab - cn + f_p)D + \alpha\beta(cm + chb + f_i)]P = 0 \text{ when } t > 0 \quad (7i)$$

$$P = 0,\ DP = -\alpha,\ D^2P = \alpha^2(l + \beta f_d) \text{ when } t = 0 \quad (8i)$$

With $\alpha = 4$, $l = 0{\cdot}25$, $\beta = 2$, $m = 0{\cdot}05$, $ab = 0{\cdot}2$, $hb = 0{\cdot}25$ and f_p, f_i and f_d equal to zero, the solutions for various values of c and n are shown in the table below :

c.	n.	P.	Curve.
0	—	$-2{\cdot}22 - 2{\cdot}30e^{-1{\cdot}5t} \sin(66{\cdot}5°\ t - 75{\cdot}5°)$	Figs. 13 and 14 (*a*)
0·5	0·2	$-0{\cdot}38e^{-1{\cdot}82t} - 8{\cdot}00e^{-0{\cdot}59t} \sin(32{\cdot}0°\ t - 2{\cdot}72°)$	Fig. 13 (*b*)
1	0·2	$0{\cdot}36e^{-2{\cdot}59t} - 3{\cdot}36e^{-0{\cdot}21t} \sin(53{\cdot}9°\ t + 6{\cdot}1°)$	Fig. 13 (*c*)
2	0·2	$0{\cdot}39e^{-3{\cdot}32t} - 2{\cdot}25e^{0{\cdot}16t} \sin(68{\cdot}3°\ t + 10{\cdot}0°)$	Fig. 13 (*d*)
0·5	− 0·2	$-2{\cdot}46e^{-0{\cdot}24t} - 2{\cdot}7e^{-1{\cdot}32t} \sin(75{\cdot}2°\ t - 64{\cdot}0°)$	Fig. 14 (*b*)
1	− 0·2	$-2{\cdot}11e^{-0{\cdot}66t} - 2{\cdot}86e^{-1{\cdot}17t} \sin(86{\cdot}6°\ t - 47{\cdot}6°)$	Fig. 14 (*c*)
2	− 0·2	$-1{\cdot}05e^{-t} - 2{\cdot}31e^{-t} \sin(112°\ t - 27{\cdot}2°)$	Fig. 14 (*d*)

If for each set of values of c and n in the above table, f_p, f_i and f_d are given the corresponding values shown in the table on page 315, the solution of the system becomes

$$P = -0{\cdot}26\ e^{-1{\cdot}14t} - 1{\cdot}10\ e^{-1{\cdot}73t} \sin(207°\ t - 13{\cdot}6°),$$

which is plotted as Curve (*e*) of Fig. 13.

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"TIED" INTERNATIONAL TRADING—THE INDONESIAN RAMI FIBRE TEST CASE[1]

I. Introductory

Not all countries are fortunate enough to have all the factors of production they need or, indeed, enough foreign exchange to buy the necessary raw materials. Hence solutions are being sought along unorthodox lines.

Japan has plenty of skill, experience, labour and capital equipment, but she is short of fibres necessary for her textile industry. Indonesia has no skill, little native entrepreneurship and no capital, but she could grow some fibrous plants. She, like Japan, has no cotton, but she could grow a significant quantity of rami (a kind of huge nettle), whose fibre is converted into strong and satisfying textiles. Japan has considerable knowledge of processing rami fibre, some stages of which (especially the de-gumming) are complicated and could not at present be undertaken in Indonesia. Rami textiles are extremely strong and substitutable for a range of cotton piece goods. Other countries of the South-east of Asia, such as China, have established successful textile industries based on rami.

During the occupation of Indonesia (1942–45) the Japanese authorities turned a not inconsiderable area of good land from plantation products, *e.g.*, tobacco, to growing rami, notwithstanding the fact that rami is said to sap the strength of the soil more than any other crop. Rami culture is much more labour-intensive than that of most native crops, and it yields five or six crops per annum. Java and Sumatra have conditions suitable for growing some rami.

After the war the area under rami cultivation was considerably reduced, but several Indonesian Government experimental farms are engaged in rami culture. Under post-war conditions Japan's textiles problem remains unsolved and hence her interest in securing steady and regular supplies of suitable fibres from sources near by and with the minimum use of foreign exchange. There seems to be here a strong desire to enter into specific bilateral commitments with her suppliers of raw materials.

[1] All views expressed in this article are exclusively those of the author and commit the National Planning Bureau or the United Nations T.A.A. in no way whatsoever.

Amongst the solutions suggested, but not yet implemented, is the conclusion of "tied" transactions, which would cause trade to flow outside the usual channels.

In this article we propose to study this type of "tied" transaction from a general point of view, using the example of Japan merely as a case of an industrial country facing a shortage of raw materials and Indonesia, on the other hand, as a case of an underdeveloped country capable of producing some of the raw materials but unable to process them into consumers' goods, of which she stands in need.

II. Free and Tied International Transactions

The economic evaluation of "tied" deals depends on the detailed provisions written into these transactions. One can discuss the balance of advantages only if all terms are clearly stated. Sometimes even a seemingly unimportant detail may turn the scales one way or the other. Rami fibre is no exception to the above remarks and, even if rami could be produced in Indonesia at very low costs and even if it did not displace any other lines of production, the terms of the barter of crude rami fibre against any other goods would have to be most meticulously considered. Details of such a barter proposal have not as yet been made known; hence we can analyse the whole problem of exchanging Indonesian rami against other products only in very broad analytical terms.

The present production of crude rami in Indonesia is very small and confined to a limited number of estates. We are told that planting of rami could be enlarged, and in fact during the Japanese occupation of 1942–45 output was beginning to increase. Assuming that a large crop of rami could be obtained, and assuming that the "displacement" cost would not be unduly large in terms of foregoing the output of other crops, our problem is: which is the best way of disposing of the rami produced.

The fact that during the war the Japanese showed much interest in rami seems to indicate a line of thought very likely to continue in peace-time. They have greatly improved the method of turning rami fibre into excellent textile products.

Like many other products, rami fibre produced in Indonesia could be dealt with in one of the following ways:

(*a*) it could be processed locally and converted into finished products, and either sold in Indonesia or exported;

(*b*) it could be passed through only the first crude stages

of processing and then exported against payments in dollars or any other valuta;

(*c*) it could be bartered or sold through a "tied" transaction in return for other goods which the other partner to the exchange can supply;

(*d*) it could be exchanged in a "tied" deal against rami finished products (textile) destined mainly for the Indonesian domestic market;

(*e*) finally, it could be dealt with by a combination of the foregoing.

From our viewpoint that course which gives maximum gain to the Indonesian economy must be followed. Where world prices are received for crude rami exported and world prices paid for other goods or finished rami products, the balance of advantages may not be difficult to arrive at. The assessment of "tied" transactions presents some difficulty.

Transactions vary as to the extent to which they are "tied"; some can be more tied than others. Indonesia would be much more restricted in her trade if the proceeds from rami sold to Japan were restricted to purchases of finished rami products than if she could buy any products of Japan she might choose. The narrower the range of goods or the choice of the manufacturers from whom Indonesia may be allowed to purchase the goods with the proceeds from her exports, the tighter is the nature of the "tie" and the greater, of course, should be the benefit for Indonesia derived therefrom.

III. The Essence of "Tied" Transactions

The basic outlines of nearly all workable "tied" agreements are very simple indeed. In the case of Indonesia they work as follows:

Indonesian exportable "surplus" products, *e.g.*, rami (assuming "tied" trade between Indonesia and Japan) will be exported from Indonesia and will, in all probability, be payable to the Indonesian producers in rupiahs, which in turn will be received from the Indonesian importers of Japanese goods into Indonesia. The Japanese exporters of goods will, in turn, be paid out of the proceeds from the sale of Indonesian crude rami by Japanese importers and manufacturers. It makes no difference if we introduce the intermediary of any go-between marketing organisation on either side, or if—as it is possible in case (*d*) discussed above—the

same Japanese firms import Indonesian rami and export their own finished Japanese products to Indonesia. Transactions of the latter type can be effected almost without money. Firms receive raw materials and send out an agreed equivalent amount of finished rami products; the settlement of this sort of transaction can safely be left to the accountants.

It is quite possible, unless otherwise stated in the "tied" agreement, that the Japanese may obtain additional privileges in that they may regard themselves free to sell the Indonesian rami in the world market in competition with ordinary Indonesian rami sales, and thus gain useful dollars, which in turn can be always sold at a premium to most soft-currency areas. Hence it should be possible, in many cases, in the course of negotiations for a "tied" agreement, if they are conducted with skill and acumen, to secure for Indonesia corresponding privileges, *e.g.*, the choice of goods from countries outside Japan and to make the Japanese responsible for paying for them with the dollars obtained from the sale of Indonesian crude fibre.

IV. How to Judge the Usefulness of "Tied" Transactions?

Before going into the details of a transaction which involves entering into "tied" commitments, the Government of Indonesia must be in possession of a general formula by which it can judge whether it is worth while studying any proposals at all and whether a *prima facie* case has been established for entertaining the idea of such transactions.

We shall now develop a formula which could constitute an acid test of every "tied" transaction, using the rami fibre as an example. It should be stressed that this will be only the first acid test and that other rigid tests must be applied later. But its importance lies in the fact that it is the first test; hence if it is not satisfied, further analyses become automatically redundant.

V. The General Test

Is a "tied" transaction advantageous as compared with an open system of international trading? The general formula which should guide us is this: The "tied" transactions for our rami fibre are neither more nor less advantageous than transactions in the open world-market if:

The prices of the products sold by Indonesia in the world markets related to the prices of manufactures paid by Indonesia

in the world market stand in the same ratio as the prices of products obtained by Indonesia in the "tied" market to the prices of manufactures paid by Indonesia to the "tied" supplier.

Call the price of Indonesian rami in the world market $IG(w)$.

Call the price of manufactures bought by Indonesia in the world markets $MP(w)$. Then the ratio $IG(w) : MP(w)$ gives us something corresponding to the Indonesian terms of trade in terms of internationally traded rami and manufactures.

Call the price of Indonesian surplus rami obtained in the "tied" deal $IG(t)$.

Call the price of manufactures bought by Indonesia in the "tied" market $MP(t)$.

Then the ratio $IG(t) : MP(t)$ gives us something corresponding to the Indonesian terms of trade in terms of rami and manufactures exchanged through the "tied" deal.

The critical point is reached when :

$$(1) \qquad \frac{IG(w)}{MP(w)} = \frac{IG(t)}{MP(t)}$$

(in which case the "tied" deal is neither attractive nor disadvantageous to the Indonesian economy);

$$(2) \qquad \frac{IG(w)}{MP(w)} < \frac{IG(t)}{MP(t)}$$

(then the transaction passes the first test); and again

$$(3) \qquad \frac{IG(w)}{MP(w)} > \frac{IG(t)}{MP(t)}$$

(here the "tied" transaction fails already in the first test).

The fact that we decide to call some goods "surplus" does not alter the General Formula.[1]

Thus armed with our formula, we now see that only if condition (2) is satisfied does the "tied" type contained in the international transactions pass the test. Seeing, however, the various attendant inconveniences and limitations which would be imposed on the Indonesian Republic by the so-called "basic agreement," and having regard to the considerable change which the

[1] Similar considerations underlie the practice of international dual pricing. See: A. M. de Neuman and D. J. Morgan, "Some Economic Aspects of Dual Pricing" in *Cartel*, July 1951.

agreement would have to bring about in the structure of commerce in this country, it would be necessary for the difference between

$$\frac{IG(t)}{MP(t)} - \frac{IG(w)}{MP(w)} = \max.$$

and in addition to the above condition, to be also of considerable magnitude.

The bigger the risks and the inconvenience of changing the traditional pattern of trade, the greater should be this difference. But it should be remembered that if, after a full and thorough investigation of the proposals, the advantages arising out of the proposals outweigh the disadvantages, and no doubt such a point could be reached in certain circumstances, then the case for concluding the agreement would be established.

The formula as worked out can be expressed in the statement that before the proposition is worth investigating, the terms of trade implied in it must be more favourable to Indonesia than are the terms of trade for the same commodities in the world market.

The first unavoidable complication is in the determination of the four quantities in the formula. To simplify the statement, suppose that the proposal concerns rami and textiles, and the quantity (and grade, etc.) of rami for the specified textile is contained in the proposal, then all we have to do is to determine the two quantities in the other ratio, which we are using as a standard.[1]

VI. Additional Tests

In Section II we have listed various possible types of transactions, of which (*b*) to (*e*) applied to international exchange of Indonesian rami. We could arrange these types of transactions in their order of desirability on general grounds. Thus we could say that type (*b*), *i.e.*, ordinary sales of rami for dollars, is more desirable and less risky than (*c*) or (*d*) in which we exchange the raw material against its finished product manufactured in any particular country (Japan). Finally, we could say that a "tie"

[1] The value of the manufactures in question might be found by asking other suppliers to quote prices. The value of the rami to Indonesia would have to be determined; if the quantity involved in the proposal is small in relation to the total quantity on the world market, then no problem arises. But if the quantity involved in the proposal (say Δq) is large, both in relation to the total in the world market and the total sold by Indonesia (say q), then the new price (say $p + \Delta p$) will be different from the price that would have existed, Δp, if the additional quantity of rami was not unloaded. The value to Indonesia of the additional rami is then $[(p + \Delta p)\ (q + \Delta q) - pq]$, it being understood that Δp is opposite in sign to Δq.

to a particular factory, which we could call type d_2, may be even less desirable than type d_1, in which we have at least a choice of the factory in Japan where the rami products are to be manufactured.

What is now the test of the desirability of the transactions? On general grounds it should be said that the more "tied" the transaction the greater must be the accompanying advantage which should be demanded as a counterpart. Thus the terms of exchange under type d_2 should be more advantageous than the terms under d_1; the terms under the (d) types should be better than under (c); (c) better than (b).

Adding the respective suffixes to our previous terms in the General Formula, we postulate that the following inequalities should be satisfied:

$$\frac{IG(w)}{MP(w)} < \frac{IG(t)}{MP(t)}$$

$$\frac{IG(t)}{MP(t)} < \frac{IG(t)c\,;}{MP(t)c}$$

$$\frac{IG(t)c}{MP(t)c} < \frac{IG(t)d_1}{MP(t)d_1}$$

$$\frac{IG(t)d_1}{MP(t)d_1} < \frac{IG(t)d_2}{MP(t)d_2}$$

Thus $\dfrac{MP(t)d_2}{IG(t)d_2}$ must be smallest of all.

Transactions of type (e) would have to be fitted in the picture, presumably somewhere in between, but certainly lower than transactions of type (b).

VII. Case of More than Two Commodities Exchanged

Before we leave this subject and proceed to the analysis of some of the possible provisions and their implications, a word of general explanation should be said about the use of the General Formula. When we are dealing with one commodity only on each trading side, *e.g.*, textiles on the Indonesian import side and, say, rami on the export side, then the formula is unambiguous and easy of application. $IG(w)$ is then the average price realised in the sale of Indonesian rami, $MP(w)$ is the price of the products (in the same currency) bought by Indonesia in the cheapest foreign market; $IG(t)$ is the average price paid by Japan to Indonesia in rupiahs for rami, and $MP(t)$ is the rupiah price paid for Japanese

manufactures (or preferably the price paid for the most expensively priced manufactures).

Complications arise as soon as we have many commodities on each side and some, *e.g.*, Japanese clothes, are priced cheaply, but Japanese yarn is expensive. How, then, to strike an average between some goods which are cheap and some which are expensive, and how to assess the advantage of a transaction of this type? The problem becomes very difficult and one which lends itself to different interpretations by the two sides. The technician calls it the problem of index numbers, and he knows that different value judgments are then possible by the two contracting parties. Bearing in mind that "tied" transactions often cover or lead to a number of commodities changing hands on each side of the exchanging parties, the problem will always be present.

VIII. An Appraisal

A "tied" scheme is not a shot in the dark, and it seems to make sense. In fact, it resembles very closely the type of agreement of which the Germans had considerable experience before the war, and which operated to the interest of Germany and in some cases gave a limited advantage to the other contracting countries.

Our General Formula developed earlier can assist us in the evaluation of any concrete proposals. The formula tells us that the left-hand and the right-hand side of the disequality are not independent but interconnected. Thus if, for instance, there is any connection between say, $IG(t)$ or the quantity of goods sold at $IG(t)$ prices *and* the $IG(w)$ prices or the quantity of goods sold at $IG(w)$, then this effect must be taken into account in deciding whether the transaction will prove profitable or not. This point will be easily understood. Some Indonesian products may be termed exportable "surplus products" and may be purchased with the view to further export to "hard" or "soft" currency countries, thus, presumably, depressing the prices of other goods in the same class exported from Indonesia outside the "surplus products" agreement, or proposed agreement. In turn, will some Japanese manufactured goods also be declared "surplus goods," and will Indonesian traders be allowed to export them to "hard" or "soft" currency countries? The latter, if feasible, might be very profitable to Indonesian economy, and there is no reason why such a full symmetry in the treatment should not be at least the starting point. If Indonesia has to forego this stand

later in the negotiation this should not be given up without some valuable compensations. A free hand given to the Japanese contractors over Indonesian goods like rami traded internationally may have a detrimental effect on $IG(w)$, *i.e.*, on the prices realised for Indonesian goods in the world markets in sales through orthodox channels.

It should always be borne in mind that Indonesian export goods, such as raw rami, entering into international trade are of a more homogeneous nature and of a kind more easily substituted for other similar commodities than the Japanese industrial products. Hence, there is a *prima facie* fear that the effect of $IG(t)$ on $IG(w)$ will often be greater than the effect of $MP(t)$ on $MP(w)$; in other words, the Japanese sales of Indonesian " surplus goods " in the world markets can do more harm to the Indonesian trade in the open world market than the Indonesian sales of Japanese industrial products made to suit Indonesian taste.

So far we have been assuming that under the agreement Japan would allow Indonesia to buy Japanese products of any kind she might choose. This need not always suit the Japanese. Indonesia will presumably be expected to submit a list of industrial products required.[1] A lot will depend on how much choice is allowed. It is not inconceivable that the choice might be very limited. The deal would certainly be worth considering if there were absolutely no limitations or restrictions whatsoever *de facto* or *de jure* as to the type of goods or equipment which may be obtained from Japan. It would be most advantageous if capital goods could be bought from Japan.

IX. Financial Provisions

It is not uncommon for " tied " agreements to be reinforced by various types of credit or banking facilities. These arrangements are sometimes provided by one side to the transaction or by banks operating in third countries. Bank credit is not an essential part of the transaction, although it often benefits both countries. Let us assume that the bank credit will come from United States bankers. These credit arrangements must be studied very carefully. Any real long-term credit coming from United States banks would be of undoubted benefit to both countries : Indonesia and Japan. To Japan it would guarantee better employment in her industrial units by enabling her customer

[1] This may present great administrative difficulties from the planning point of view, see A. M. de Neuman " Approaches to the National Economic Planning in Indonesia " in *Economics and Finance of Indonesia*, October 1953, Djakarta.

to become a steady buyer, and it would allow Indonesia to buy manufactured goods from Japan, including capital goods which could facilitate the progress of industrialisation. In so far as this last class of goods is concerned, however, one should always bear in mind that Indonesia has not only an acute shortage of one factor of production—capital—but also of another factor of production—skilled labour. Capital without skilled labour is useless. Hence, Indonesia must not spare any effort in training labour so as to be able to receive and use the capital imported. A sufficiency of skilled labour is a precondition.

Banking facilities sometimes provide for opening of special accounts connected with "tied" transactions. The bank financing the transactions and granting credit may wish to have the power of disposal over the balances arising in the course of the implementation of the transactions. It is not uncommon for the bank to wish to have a free hand over the so-called "commodity exchange accounts." It may even be contemplated that the bank could supply rupiahs to outside customers. In this way a new and undesirable competition in the supply of rupiahs in competition with the national monetary authorities might be created. This may easily undermine the position of the rupiah in the currency markets of the world, and may run counter to the policy of the central bank of Indonesia.

A "tied" transaction could always be restricted to a certain sum of money, say, $10 million. The ceiling figure by itself is of very little meaning, and presumably constitutes only the upper limit of the transactions, at any time. There is no clear indication whether the long-term banking credit will rise to that amount. Also little can be said as to how often the transactions will have to be cleared. It would certainly not be in the interests of Indonesia to oversell rami or any other goods to Japan and, in fact, feed Japan with credit. The boot must be on the other foot. It is Japan, who, by obtaining credit from the United States bankers, should offer to Indonesia long- and medium-term credits gradually repayable in the so-called Indonesian products. In this type of transaction it is very important to remember that it is the debtor who is usually faring better than the creditor, and the timing for the start of the transaction is very important.

But in order to derive the maximum advantage from the deal, the Indonesian side must be perfectly clear what types of goods will be most needed here from Japan (or what goods could profitably be sold) and to be in the position to correlate the deliveries of Indonesian goods with the delivery to Indonesia of Japanese

products. This timing business will not be easy. Moreover, it should be remembered that wantonly ordered machinery, or machinery which is not immediately needed and is left rusting on the sites, is an admission of failure.

It is almost certain that, at large, the banking and commercial circles in the United States and the majority of capitalist countries will not like a " tied " agreement. This in itself may perhaps, not be so important provided the benefits derived for Indonesia are large and of a standing nature. Small risks, if counterbalanced by big potential gains, are sometimes worth taking. All will thus revolve around the magnitude and likelihood of the gain and the capacity for carrying out such transactions.

X. Administrative Problems

The administration of a " tied " agreement is a very skilled job. It is not easy to pilot a " tied " transaction so as to derive a full benefit therefrom; and it is easy to fall victim to mistakes. Japan and Germany have an enormous store of commercial experience and great resources of commercial and administrative skill in carrying out transactions which by the nature of things become divorced from the ordinary market mechanism. Indonesian resources in this field are untried and experience is scanty.

In " tied " transactions the advantages or disadvantages usually depend on administrative and commercial minutiæ. It is often the details and the incidentals that really matter. We have constantly to watch the extent of monopoly (or for that matter monopsony) on each side to the transaction and in each field; freedom of switching from one type of delivery to another; the relative prices of goods exchanged. We have constantly to be aware of the relative advantages at any point of time of the transactions described in Section II. Should one really tie the crude rami exports exclusively to Japanese textiles? Why not, for instance, to cambric, which is badly needed by the Indonesian batik industry, and which is in short supply owing to insufficient dollar allocation to this traditional Indonesian industry? How is the Marketing Organization in Indonesia to assemble the Indonesian orders for Japanese manufactures? The difficulty is big enough if we restrict ourselves to ordering Japanese rami textiles. It increases manyfold if we include other products. In what valuta will short deliveries be settled and at what prices? What will be the machinery for settling queries, let alone disputes, as

to gradings, short deliveries, measures, failures to keep dates, etc.?

The exchange under proper safeguards of Indonesian against Japanese goods may be profitable for Indonesia if transacted with expert knowledge of what products are wanted and of the problems of marketing the Indonesian goods. But in fact would not Indonesia be facing, sooner or later, a tight ring of Japanese goods producers? Could she be allowed to go outside the ring or even outside Japan to buy her requirements? How would competitive safeguards be maintained? Would terms of delivery, prices, availability and prices of spare parts and replacements be satisfactory from the Indonesian point of view? Would not excessive play be made of patent rights and charges made for their use? Would Japan claim to buy all or only some "surpluses" of Indonesian rami and other goods? All these and many other matters are handled by people. Japan can be perfectly sure that she has the men to look after her own interests in arranging and carrying out these delicate, difficult and very tricky transactions. Her contacts with the international banking and commercial world are well established. Can the same be said of Indonesia? And let us remember that we are upsetting the free trading channels and directions of trade. On the answer to this question depends much of the answer to the whole proposal. There certainly can be terms of agreement which may undoubtedly be to Indonesia's benefit, but such terms would have to be very carefully negotiated.

It is difficult in advance to foresee all the implications which a "tied" scheme of bartering of Indonesian raw rami fibre against Japanese goods may contain and all the effects which it may bring about on the organisational pattern of Indonesian economy. It seems almost certain that not only would the buying and selling of crude rami fibre in Indonesia and its export have to be placed in the hands of some specialised agency but also that Japanese rami finished goods and other products imported into Indonesia through the "tied" transaction would have to be placed in its hands. The administration and the principles which should guide the agency may not be all plain sailing. There would have to be an office through which Indonesian demands for Japanese goods would have to be canalised. Will this be an easy job? Will the business and industrial enterprise be thereby assisted, or hampered? Will it be easier and better to wait for import permits for products from the non-tied sources, or will it be much better to obtain one's equipment via the new office,

possibly with less waiting and without having to pay anything in advance? These questions cannot be answered theoretically only, since they are of the utmost practical importance.

The skeleton part of the "tied" agreements is sometimes contained in a framework agreement, as was often customary in German "tied" agreements. Such a "Rahmenvertrag" may leave much or little room for individual transactions. Sometimes such basic "framework" agreements provide that deliveries and payments made on their basis are to remain outside and above the existing general agreements or agreements to be concluded in the future between the contracting countries. Difficulties may arise here. Moreover, it is not altogether clear what obligations may arise out of the GATT provisions.

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THE REPRESENTATIVE FIRM [1]

IT is now more than twenty-five years since Professor Robbins's famous article on the representative firm finally drove that concept from the pages of economic text-books.[2] It is the purpose of this paper to reconsider the whole discussion which accomplished this remarkable feat, and of which Professor Robbins's contribution was but a part. It is not my intention, however, merely to review the controversy. The reader will find that I offer what I suspect is a new interpretation of the theory of the representative firm.

Marshall's whole account of supply price centred around the theory of the representative firm. This firm possessed both external and unexhausted internal economies. Its size and access to these economies depended on the output of the industry. And its cost of production governed the supply price of the industry. We may quote a famous passage from Marshall:

> "These results will be of great importance when we come to discuss the causes which govern the supply price of a commodity. We shall have to analyse carefully the normal cost of producing a commodity, relative to a given aggregate volume of production; and for this purpose we shall have to study the *expenses of a representative producer* for that aggregate volume. On the one hand, we shall not want to select some new producer just struggling into business, who works under many disadvantages and has to be content for a time with little or no profits, but who is satisfied with the fact that he is establishing a connection and taking the first step towards building up a successful business; nor, on the other hand, shall we want to take a firm which by exceptionally long-sustained ability and good fortune has got together a vast business, and large well-ordered workshops that give it a superiority over almost all its rivals. But our representative firm must be one which has had a fairly long life, and which has normal access to the economies, external and internal, which belong to that aggregate volume of production; account being taken of the class of goods produced, the conditions of marketing them and the economic environment generally." [3]

[1] Most of this paper was first developed during my period as a Student of Nuffield College, Oxford (September 1950 to June 1952). I have been greatly helped and encouraged by Professor J. R. Hicks and by others then at Nuffield, notably Mr. R. W. Clower. I am much indebted, as well, to the writings of Mr. P. W. S. Andrews.

[2] Lionel Robbins, "The Representative Firm," ECONOMIC JOURNAL, Vol. XXXVIII (1928), pp. 387–404.

[3] Alfred Marshall, *Principles of Economics*, 8th Edition (London: Macmillan, 1920), p. 317, hereafter simply styled *Principles*.

It was generally agreed that the theory of the representative firm applied to conditions of what Marshall called "free competition" and "long-run equilibrium." The meaning of these terms was the pivot upon which, it can now be seen, criticism has turned. Those who attacked Marshall assumed that he had in mind what we would now call perfect competition and static equilibrium. Using this interpretation, Mr. Sraffa showed that Marshall had apparently involved himself in a logical inconsistency.[1] Unexhausted internal economies are not compatible with static equilibrium under perfect competition; the representative firm was not useful for determination of price under competitive conditions. But it was still used as a tool of the theory of distribution. It was here that Professor Robbins's intervention was decisive. He showed that with free mobility of resources and static equilibrium the representative firm was unnecessary for the theory of distribution, and might even prove misleading. Thus was the last important refuge of the theory of the representative firm denied it. It lingered for a while, a mere shadow of its former self, as an explanation of the different sizes of the typical firm in different industries, but has gradually passed from the stage altogether.

One of the most startling things about this controversy is the fact that such a far-reaching change in the structure of economic theory was allowed to take place without any really determined opposition. Partly, this may be explained by the fact that some of those who defended the representative firm were really interested not so much in this concept itself as in its use as an explanation of the existence of industries obeying the law of increasing returns. It will be remembered that such industries played an important part in the welfare prescriptions of both Marshall and Pigou. As long as economies external to the firm remained unscathed, the essential structure of this analysis was untouched, and alarm seemed unnecessary.

Of course, in the upshot this complacency proved unjustified. Sraffa's objection that economies external to the firm but internal to the industry were rare has, whatever the truth of the matter, been widely accepted.[2] And Mrs. Robinson's comment that external economies are inconsistent with perfect competition throughout the economy has proved more telling still.[3] But the

[1] P. Sraffa, "The Laws of Returns under Competitive Conditions," ECONOMIC JOURNAL, Vol. XXXVI (1926), pp. 335–50.

[2] Sraffa, *ibid.*

[3] J. Robinson, *Economics of Imperfect Competition* (London: Macmillan, 1933), p. 341.

thing which must surely strike one as most influential, both in undermining the Pigouvian position and in taking attention away from the representative firm, has been the development of the theories of imperfect and monopolistic competition.

The treatment of the economic environment as characterised by monopoly rather than competition was proposed in detail by Mr. Sraffa. One of his chief grounds for this attitude is the widespread prevalence of unexhausted internal economies. He says:

> "Everyday experience shows that a very large number of undertakings—and the majority of those which produce manufactured consumers' goods—work under conditions of individual diminishing costs. Almost any producer of such goods, if he could rely upon the market in which he sells his products being prepared to take any quantity of them from him at the current price, without any trouble on his part except that of producing them, would extend his business enormously. It is not easy, in times of normal activity, to find an undertaking which systematically restricts its own production to an amount less than that which it could sell at the current price, and which is at the same time prevented by competition from exceeding that price. Business men, who regard themselves as being subject to competitive conditions, would consider absurd the assertion that the limit to their production is to be found in the internal conditions of production in their firm, which do not permit of the production of a greater quantity without an increase in cost. The chief obstacle against which they have to contend when they want gradually to increase their production does not lie in the cost of production—which, indeed, generally favours them in that direction—but in the difficulty of selling the larger quantity of goods without reducing the price, or without having to face increased marketing expenses . . . ." [1]

Mrs. Joan Robinson took up the argument where Mr. Sraffa left off. She recognised clearly the importance of the theory of imperfect competition for the explanation of internal economies. In the introduction to her book she says:

> "Moreover, the relation between the real world and the competitive analysis of value was marred by frequent misunderstandings. The economists, misled by the logical priority of perfect competition in their schemes, were somehow trapped into thinking that it must be of equal importance in the real world. When they found in the real world some phenomenon, such as 'economies internal to the firm,' which is inconsistent with the assumptions of perfect competition, they were inclined to look for some complicated explanation of it, before the simple explanation occurred to

[1] Sraffa, *loc. cit.*, p. 543.

them that the real world did not fulfil the assumptions of perfect competitions. Or they were tempted to introduce into the theoretical scheme elements which, at a superficial glance, appeared to account for the phenomena of the real world, but which completely destroyed the logical self-consistency of the theoretical scheme." [1]

It is important to notice that Mrs. Robinson begins by accepting the Marshallian emphasis on the industry. It seems to have been her intention to derive a supply curve for an industry whose constituent firms are in imperfect competition. But it is tempting to argue that an industry must sell its products at a single price if it is to be said to have a supply price. And thus there is a great difficulty in providing such a supply curve for an imperfectly competitive industry, a difficulty which Mrs. Robinson never really overcame. If each firm has its own demand and cost curves, it is not at once obvious that the price of the commodities produced by the various firms will be the same. Moreover, a particular shift of the demand curve facing each firm may result in a rise or fall of price, depending on the elasticity of the demand curve before and after the shift. It is not even certain how a shift in demand will change output; it may raise or lower it.

Mrs. Robinson attempts to solve these problems by postulating identical demand (and cost) curves for all firms in the industry, both before and after any shift in demand. This heroic assumption apparently removes the problem of different prices appearing for the same commodities; but it does not remove the indeterminancy of the supply curve. To discover the supply curve one must still know the *elasticities* of the particular demand curves before and after the change.

Professor Chamberlin has followed Mr. Sraffa more closely. He has contented himself with analysing the reactions of single firms and groups of competitors, and very carefully avoids talking about the supply curve of an industry under monopolistic competition. The difference of attitude between him and Mrs. Robinson is especially noticeable when we consider the problem of the nature of product differentiation. Whereas Mrs. Robinson has defined one industry as " any group of firms producing a single commodity," and a commodity as " a consumable good, arbitrarily demarcated from other kinds of goods, but which may be regarded for practical purposes as homogeneous within itself," [2] Professor Chamberlin shuns any such definitions. He even remarks that " this complete absence from imperfect competition of what is

[1] J. Robinson, *loc. cit.*, p. 4. [2] J. Robinson, *loc. cit.*, p. 17.

probably the most fundamental concept of monopolistic competition," *i.e.*, the differentiation of the product, underlies the striking divergence between them in their interpretation of the economic system.[1]

Now, although Professor Chamberlin may be exploiting a merely verbal distinction between his and Mrs. Robinson's work, it seems to me quite fair to argue that he does intend a real break with the Marshallian tradition of industry analysis. His own explicit evaluation of the use of the industry concept is very timid, and yet the emphasis of the whole is unmistakable.[2] It is not surprising to find that Professor Triffin, carrying Professor Chamberlin's analysis to its logical conclusions, says : " In the general pure theory of value, the group and the industry are useless concepts." [3]

Thus the theory of monopolistic competition appears to have done away with the industry. It has, however, preserved those unexhausted internal economies which were among the principal features of the representative firm. And therefore it has helped to transfer the attention of welfare economists from the industry to the firm.

Now it is my belief that the interpretation of Marshall's theory of the representative firm as a static perfect competition model was unjustified, and that it has led to the neglect of the industry, a very useful tool of economic analysis. That Marshall's " free competition " was not perfect competition is gradually coming to be recognised. What it does imply is that " there is only one price in the market at one and the same time." [4] That Marshall regarded this as compatible with an imperfect market is clear from his treatment of a firm's " particular demand curve." [5]

What is of great interest is that this distinguishing characteristic of free competition—that " though everyone acts for himself, his knowledge of what others are doing is supposed to be generally

[1] E. H. Chamberlin, *The Theory of Monopolistic Competition*, 5th edition (Cambridge : Harvard University, 1947), p. 202, note 2.

[2] " It is not meant to discard completely the concept of an industry. In many connections it is obviously useful to delimit a portion of the economic system and study it in some degree of isolation from the rest . . . One emerges from any attempt to classify industries, however, with a feeling that it is all exceedingly arbitrary. The ' commonsense ' definition of industries in terms of which practical problems are likely to be studied seem to based much more upon technological criteria than upon the possibility of market substitution." Chamberlin, *ibid.*, p. 202, note 1.

[3] Robert Triffin, *Monopolistic Competition and General Equilibrium Theory*. (Cambridge : Harvard University, 1940) p. 89.

[4] *Principles*, p. 341.

[5] *Ibid.*, p. 458, note.

sufficient to prevent him from taking a lower or paying a higher price than others are doing " [1]—provides the essential property required for the drawing up of an industry's supply curve.

We might not be much farther along, even here, were it not for the pathbreaking work which has been done on oligopoly by by Mr. Kaldor,[2] and the analysis of empirical work by Mr. P. W. S. Andrews and others.[3] Their results make it a good deal easier for us to provide at least a plausible account of how the situation which seems to be envisaged by Marshall could arise.[4] It is widely agreed that firms involved in a chain oligopoly operate as though their demand curves had a kink at the prevailing price. If there are a fairly large body of well-informed customers, it may be difficult for a firm to raise its price even a little above the general level without losing a large proportion of its clientele. A price cut will, on the other hand, be followed by the firm's competitors, and result in little gain. At the ruling price there will be a certain portion of the market which each firm obtains; and this we may call its goodwill. Now the price in such a situation is dependent upon the decisions of the various firms competing. We need not go into that here. What is important is that however price may change when demand changes, it will still be identical for all competitors. We have here a group of firms to which it appears natural to attach the name " industry." And this " industry " avoids all the pitfalls which beset Mrs. Robinson's attempt to draw up a supply curve under imperfect competition.

Of course the " industries " of common speech produce more than one product, and sell their different products at different prices. But, as Mr. Andrews has argued, the freedom of movement between different sectors of a technologically defined industry may be very great.[5] And if it is, a given expansion in the demand for the products of such an industry which is spread evenly over all the products produced may change their relative prices in some

[1] *Principles*, p. 341.

[2] N. Kaldor, " Market Imperfection and Excess Capacity," *Economica*, N.S. 11 (1935), pp. 122–36.

[3] R. J. Hall and C. J. Hitch, " Price Theory and Business Behaviour," *Oxford Economic Papers* 11 (1939), pp. 12–45.

[4] The theory presented here is, of course, applicable only to the case of differentiated products. Where a commodity is traded on a really perfect market it must obey other, and more familiar rules. Most of the difficulty in understanding Marshall is due to the fact that he seems to have wished to subsume both cases under one theory.

[5] P. W. S. Andrews, " Industrial Analysis in Economics " in *Oxford Studies in the Price Mechanism*, ed. T. Wilson and P. W. S. Andrews (Oxford : Clarendon Press, 1951), pp. 139–73.

definite way; this would enable us, by analogy, to speak of a supply curve of this wider industry. (We would have to be prepared, however, to find that certain products would rise in price, others fall !) [1]

It is, moreover, clear that Marshall's long run is intended to apply only to the industry as a whole, and not to each of the firms in it. Otherwise his insistence that " at any moment there is a rise and fall of large businesses, at any one moment some firm being in the ascending phase and others in the descending " [2] appears to have no relevance to the representative firm.

If this interpretation is correct, then what Marshall was concerned with was, at one and the same time, the long-run equilibrium of the industry, and the movement towards, and away from, long-run equilibrium of the firm. Marshall's firm is never actually in equilibrium.[3] In any case, it seems undeniable that the firms of the real world, imperfect competitors though they may be, are in no important respect any closer to their long-run equilibrium size than were Marshall's firms. Mrs. Robinson recognised this, and merely insisted that it would be more convenient to examine the imperfections of the market before considering the growth and decline of firms :

> " There are a further set of difficulties in drawing up the supply curve, arising from the passage of time. At any one moment all the firms in an industry may not be in equilibrium (from a long-period or quasi long-period point of view), some may be growing, and others declining, and yet the industry as a whole may be in equilibrium. It might be possible, therefore, to draw an industry's supply curve without assuming each firm to be of equilibrium size. The attempt to do so introduces many formidable difficulties which we have not considered, and they have received more attention from economists than the difficulties concerned with the imperfections of markets. Various devices have been suggested to overcome them, of which the most familiar

[1] Of course a sensible supply curve for such a composite industry is possible only if index numbers are used. We might assume that the physical volume of each of the goods produced is increased by the same percentage. In that case an index number of the prices of the commodities can be constructed having the physical volumes of output as weights. A movement of demand which produced such changes in output would hardly be likely in practice, but that does not make it conceptually impossible. We will make no use of this wider interpretation of the industry in what follows. It has been introduced only as an illustration of the potential usefulness of the industry concept.

[2] *Principles*, p. 316.

[3] This is *one* possible explanation of how the firm could be selling in a *perfectly competitive* market and still possess unexhausted internal economies. But I would myself imagine that we must lay most stress on the imperfections of markets in explaining internal economies.

is Marshall's Representative Firm. Since these devices are not designed to deal with the fundamental difficulty involved in the notion of a supply curve under imperfect competition, they must be taken to represent an attempt to deal with an imaginary world in which the market is perfect, but in which firms take time to reach their equilibrium size. This does not appear to be a very satisfactory method of approach. It would be impossible to tell how rapidly firms would grow or contract in a perfect market. The influences which prevent firms from growing are closely inter-related with the influences which make markets imperfect, and it may even be that in a perfect market there are no impediments at all to the growth of firms. A more fruitful line of attack appears to be to solve first the most abstract problem, in which there is neither time nor market imperfection; then to deal with cases in which the market is imperfect, but in which firms are imagined always to be in individual equilibrium; and, finally, to introduce the element of time, and to study cases in which firms are tending to grow (or contract) towards the position of individual equilibrium. Last of all, factors connected with ignorance, inertia, and the 'human element' generally, would have to be fitted into the scheme." [1]

It appears from what we have already said that the difference between Marshall and his critics is far less in the quality of their logic than in the nature of their assumptions. That observation might indeed close this paper; but I am anxious to argue that this difference in assumptions is not merely a question of convenience. It implies, I think, a difference in the sort of problems which concerned Marshall and those that have concerned later economists.

Marshall was, it seems to me, very interested in the problem of the structure of industries; with the decline of theoretical interest in industries that problem has slipped from view. And he was interested in the problem of the growth of firms; a thing which could hardly concern the modern theorist with his assumption of static equilibrium. It is my intention to consider briefly, in what follows, what light the theory of the representative firm may cast on these matters.

Before we turn to interpretation, however, it may be wise to present a few more paragraphs from Marshall:

> "Thus a representative firm is in some sense an average firm. But there are many ways in which the term 'average' might be interpreted in connection with a business. And a representative firm is that particular sort of average firm at

[1] J. Robinson, *loc. cit.*, p. 91. Cf. also A. C. Pigou, *Economics of Welfare*, 4th edition (London: Macmillan, 1932), pp. 789–90.

which we need to look in order to see how far the economies, *internal and external*, of production on a large scale have extended generally in the industry and country in question. We cannot see this by looking at one or two firms taken at random, but we can see it fairly well by selecting, after a broad survey, a firm, whether in private or joint stock management (or, better still, more than one) that represents to the best of our judgment, this particular average.

"The general argument of the present book shows that an increase in the aggregate volume of production of anything will generally increase the size, and therefore the internal economies possessed by such a representative firm; that it will always increase the external economies to which the firm has access; and this will enable it to manufacture at a less proportionate cost of labour and sacrifice than before." [1]

"When, therefore, we are considering the broad results which the growth of wealth and population exert on the economies of production, the general character of our conclusions is not very much affected by the fact that many of these economies depend directly on the size of the individual establishments engaged in the production, and that in almost every trade there is a constant rise and fall of large businesses, at any one moment some firms being in the ascending phase and others in the descending. For in times of average prosperity decay in one direction is sure to be more than balanced by growth in another." [2]

"Let us call to mind the representative firm, whose economies of production, internal and external, are dependent on the aggregate volume of the production of the commodity that it makes; and, postponing all further study of the nature of this dependence, let us assume that the normal supply price of any amount of that commodity may be taken to be the normal expenses of production (including *gross* earnings of management) by that firm. That is, let us assume that this is the price the expectation of which will just suffice to maintain the existing aggregate amount of production; some firms meanwhile rising and increasing their output, and others falling and diminishing theirs; but the aggregate amount of production remaining unchanged. A price higher than this would increase the growth of the rising firms and slacken, though it might not arrest, the decay of the falling firms; with the net result of an increase in the aggregate production. On the other hand a price lower than this would hasten the decay of the falling firms, and slacken the growth of the rising firms; and on the whole diminish production: and a rise or fall in price would affect in like manner, though perhaps not in an equal degree, those great joint-stock companies which often stagnate, but seldom die." [3]

[1] *Principles*, p. 317. [2] *Ibid.*, p. 316. [3] *Ibid.*, p. 342.

> "Thus the history of the individual firm cannot be made the history of an industry any more than the history of an individual man can be made into the history of mankind. And yet the history of mankind is the outcome of the industry of individuals; and the aggregate production for a general market is the outcome of the motives which induce individual producers to expand or contract their production. It is just here that our device of a representative firm comes to our aid. We imagine to ourselves at any time a firm which has its fair share of those internal and external economies which appertain to the aggregate scale of production in the industry to which it belongs. We recognize that the size of such a firm, while partly dependent on changes in technique and in the costs of transport, is governed, other things being equal, by the general expansion of the industry. We regard the manager of it as reckoning up whether it would be worth his while to add a certain new line to his undertakings; whether he should introduce a certain new machine and so on. We regard him as treating the output which would result from that change more or less as a unit, and weighing in his mind the cost against the gain." [1]

We may interpret these paragraphs, with that given earlier, in this way:

(1) The firms that make up an industry find their sales limited by their kinked and falling particular demand curves. The total demand curve for the product of the industry determines, within obvious limits, the output of the industry as a whole at each price.

(2) The supply curve of an industry shows the costs of production of the representative firm in that industry at each output. If price is different, at any output, from the costs of production of the representative firm for that output, forces will be set up tending to move price to that latter level. These forces are a result of the nature of oligopolistic competition; their operation will be influenced somewhat by the circumstances described in point (4) below.

(3) The size of the representative firm depends on the output of the industry and the price at which its products are sold. For each level of output there exists one price at which the size of the representative firm is in equilibrium, and for each price, one output. The locus of these price–output combinations is the supply curve.

(4) If the size of the representative firm is in equilibrium at a particular level of output and price, a rise of price or a

[1] *Principles*, p. 459.

growth of output will increase its size, and a fall or a shrinkage will reduce it. On the other hand, an increase in the size of the representative firm will generally result in a fall of price, and a decrease will cause a rise.

(5) Firms may be out of equilibrium, even though the industry is in equilibrium. Some firms are rising, others are declining.

(6) The costs of production (whether average or marginal is not clear) of a firm decrease as its size increases, other things being equal.

(7) The external economies available to any firm in the industry increase, other things being equal, when the output of the industry increases.

(8) The supply curve of manufacturing industries is downward sloping to the right, because of the greater external economies of a larger output for an industry as a whole, and the greater internal economies open to the representative firm, which has, by hypothesis, grown with the output of the industry.

It has been customary to argue that the greatest practical difficulty in using the theory of the representative firm is that it is impossible to identify a representative firm. It follows, of course, that it is impossible to say whether the firm has grown. This appears to me to be a mere quibble. When I say that the age of the representative American has grown I am not talking gibberish. I mean merely that the age-distribution of the American population has shifted in a particular way. Much the same interpretation can be given of Marshall's theory. I do not know whether the size-distribution of the firms in an industry will in fact tend to shift in favour of larger firms when an industry's output grows, but there are very many plausible reasons why it should, centring around the opportunity which an established business has of getting the lion's share of any increase in trade.

The most severe difficulty which such an interpretation has to meet is the explanation of point (7) above. It may be said that Marshall has clearly in mind here that the normal supply price of any amount of a commodity is equal to the costs of production of some *particular* firm. But it seems to me that to speak thus is to ignore the fact that Marshall was above all a mathematician. My interpretation of this condition is simply that there is a unique relation between the size distribution of firms in an industry and its supply price, given the level and distribution of external

economies. This is made simpler by the fact that both external economies and the size-distribution of firms (and hence the distribution of internal economies) are, by hypothesis, uniquely related to the output of the industry.

Accepting this interpretation, conditions (1) to (8) reduce to the following result. Given the level of demand, there is one price which will keep the size distribution of firms in the industry in equilibrium. That price is the supply price of the industry for that output. Now let us start from a position of equilibrium with respect to both demand and price. If the demand curve shifts to the right, but price remains the same, the existence of a supply curve downward sloping to the right indicates that, at the new level of output, the old price will be above the new equilibrium price. So the size distribution of firms will shift to the right (*i.e.*, the representative firm will grow). As a result, the level of price will have a tendency to fall until a price is reached at which the size-distribution of firms becomes stable.

It is now easy to see why Marshall regards a downward-sloping supply curve as compatible with equilibrium. The supply curve shows, not the marginal costs of production of the various firms in the industry, but rather the prices at which particular quantities demanded will be supplied in equilibrium. It is also easy to see why Marshall insists that such an equilibrium is stable only "if the demand price is greater than the supply price for amounts just less than the equilibrium amount, and vice versa." [1] For otherwise the size-distribution of the firms in the industry will continue to shift if price is reduced by some small amount, and there will be no output and price at which this size distribution will become stable.

The theory of the structure of industry which emerges from this interpretation of the representative firm is, I think, much more complete than any competitor. It must be remembered, however, that as it stands it represents merely a series of untested hypotheses. There is little *a priori* reason to believe that all industries will in fact act in the same way, so that this theory may chiefly be useful as an ideal type against which to classify the behaviour of specific groups of producers. Its empirical testing is made extremely difficult, moreover, by the fact that it assumes that the state of technique is given. It appears to be implied,

[1] *Principles*, p. 345. Marshall's doubts about the reversibility of the supply curve seem to be justified by the improbability that the shift of the size-distribution of firms will be of the same dimensions, whatever the direction of a particular shift of demand.

moreover, that each of the firms in the industry has under its control the same group of processes; as a result the practical problems of integration and disintegration seem to be beyond its grasp.

The theory we have outlined brings into sharp focus the need for further work on two broad topics. The first of these is the analysis of the price policy of firms in chain oligopoly. The second is, of course, the theory of the growth of firms. Such a theory appears particularly useful in view of the current interest in the acceleration principle.

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A REJOINDER TO MR. EDWARDS [1]

A. I AM criticised for trying to square the full cost principle with the marginal analysis without reference to the "normal cost" theory.[2] My original position was this. When asked about his price and output policy the business-man replies with a series of propositions known as the full cost principle. His "marginal" cost—s.r.m.c.(p.a.) in the figure—is merely average direct cost, and is thought of as constant with output, though he may admit it rises eventually. On top of that he charges a gross profit margin, fixes the price and sees how much he can sell. The rising stretch of s.r.m.c.(p.a.) is of no interest to him, since it represents gross over-use of the fixed plant, and he believes production greater than *OZ* to be quite uneconomic. Yet with the fixed price he has fixed for himself for the time being a marginal revenue equal to price. Therefore s.r.m.c.(p.a.) is never equated to m.r. And all this is or could be rational profit maximising behaviour, since the long-run cost of using the fixed plant is quite different from the average direct cost for various reasons (pp. 518–19). We are entitled, nay compelled, to draw a l.r.m.c.(p.a.) curve which rises sooner than s.r.m.c.(p.a.). It is this curve that determines the maximiser's output, and this concept that is equated with m.r. The elasticity of demand is neither here nor there: any elasticity will do, provided the reference is to the true elasticity contemplated in the act of price fixing, not to the falsely perfect short-run elasticity achieved by temporarily fixing the price.

P.a. stands for partial adaptation, which means changes in the quantity of variable factors, the fixed factors remaining constant. The whole discussion concerns partial adaptation only. Neither the full cost principle itself nor my reconciliation of it with marginalism cover investment policy (total adaptation): they concern the best use of a given plant only. It is my incidental opinion that investment policy is infinitely too various to be subject to any sort of generalisation at all.

Mr. Edwards defends the "normal cost" theory. This is not, as he implies, a theory of price and output invented by

[1] ECONOMIC JOURNAL, September 1952, pp. 666–73 (hereafter called "Edwards"). Compare also the same author in *Economic Record* (Melbourne), May 1952.

[2] ECONOMIC JOURNAL, September 1950, pp. 515–30.

Mr. P. W. S. Andrews. For instance Mr. Edwards refers me to *Manufacturing Business*, pp. 145 ff. But there is no statement about *output* formation on those pages, and *as far as partial adaptation goes* there appears to be none anywhere else in Mr. Andrews' writings. There is, of course, much, most of it both valuable and true, on *price* formation alone. It was not my aim to reconcile the "normal cost" theory with the marginal analysis, since I did not then know what it was, its attitude to output formation never having been stated. Mr. Edwards, however, has now kindly given me a brief statement, which is based upon his two articles. The normal cost theory holds, he says, that :

> "The problem of the individual producer is to fix a price; *not* an optimum price–output combination. He does this by reference not only to his own costs of production, but also to the circumstances of the market including (in particular) the state of actual and potential competition. In any current period of production (short run), the entrepreneur will produce and sell at this price up to the limits of the goodwill he commands in the market, notwithstanding any associated rise in short-run costs. Thus for the individual firm, *there is no determinate short period price–output equilibrium* in the usual connotation of that term; there is, rather, an equilibrium of *price* but not of output.
>
> "If this involves producing in excess of the throughput for which the plant was designed (the 'planned throughput'), then—the state of demand being judged permanent—the firm will reorganise (extend) its plant; so that in the (static) long run equilibrium of the system, there will be a tendency for each of the firms that remain to be producing at, or about, the 'planned throughput' for its plant as it obtains at that time. The equilibrium is compatible with the maximisation of profits in that the inequalities m.r. $>$ m.c. (to the left), and m.r. $<$ m.c. (to the right) would obtain (taking average direct cost as a sufficient approximation to m.c. at this point); and in this sense, profits are maximised in the long run."

There is much to attract me here, and our disagreement is narrower than might appear from Mr. Edwards' attack. Our difference concerns marginal costs, and I stand absolutely by my distinction between true m.c., or "l.r.m.c.(p.a.)," and average direct cost, or "s.r.m.c.(p.a.)." I now hold, too, that it is misleading to call average direct cost marginal at all, and cannot see why it should be so called by anyone who does not believe it equal to m.r. Finally, I deny utterly the absence of equilibrium in respect to the long-run consequences of the use of a given

plant, and believe the normal cost theory founders owing to a confusion of the short run with the existence of a given plant.

B. To turn to Mr. Edwards' criticisms, they are as follows :

> 1. " The costs which enter into l.r.m.c.(p.a.) are not subject to pecuniary expression; not even in the sophisticated sense of calculable, and hence insurable, risks. (This might be possible in respect of elements (1) and (2); but it is abundantly clear that the entrepreneur could not effectively insure against the highly uncertain and cumulative effects envisaged under (3).)
>
> " In so far as the entrepreneur does regard these costs in his price/output policy, then, the l.r.m.c.(p.a.) function is hazy, notional and subjective in the extreme.
>
> " In the normal cost theory, on the other hand, these difficulties do not arise. When it comes to the determination of the firm's price/output policy (in that theory), the consideration set out in defining l.r.m.c.(p.a.) above, are irrelevant. Where they are relevant is in explaining why the cost curve is as it is up to *OZ* in Mr. Wiles' figure; *i.e.*, in explaining why the entrepreneur plans for the operational output *OX*, *along with* a reserve of capacity beyond that (and hence, constant average direct cost over the range)." [1]

But such is life, and so are the facts ! I cannot help it if the essential magnitudes are nearly non-operative; I merely record that these *are* the essential magnitudes, and that their extreme vagueness imparts extreme vagueness to the results. This is but a bare statement of the facts. A theory imparting more precision would be wrong, as also are the naïve versions of marginalism which claim so much precision. A theory sheering away from the essential magnitudes on the ground of their imprecision, and seeking some other basis, would also be wrong. This would appear to be the fault of the normal cost theory. Besides, Mr. Edwards really admits that these magnitudes do have weight, for he goes on to say that they explain " why the entrepreneur plans, etc." In other words he admits they are relevant in orginally deciding the size of the plant; why not, then, in deciding the use of that plant ? This comes perilously close to contradicting oneself.

2. Let there be no kink in the perfectly elastic demand curve, or let it lie far to the right of *X*. Then I am criticised because in fact manufacturing firms (of which alone we are speaking) scarcely ever face perfectly elastic demand curves, since there is almost always goodwill to introduce inelasticity.[2]

[1] Edwards, pp. 667–8.

[2] Pp. 670, 672.

In fact, many manufacturers face perfectly elastic demand. To enumerate: (*a*) firms subject to governmental or cartel price control, but uninhibited by output restrictions, who find that their potential market exceeds their capacity output; (*b*) makers of simple munitions selling to the Government; (*c*) miners of precious and non-ferrous metals; (*d*) firms subjecting homogeneous raw materials to short, simple, well-known, vertically disintegrated processes—*e.g.*, cotton spinners, flour millers, private gold coiners. Such firms are entirely indifferent to goodwill.[1] If the normal cost theory cannot explain these firms' policies it must yield to a theory that can. Only I submit, by positing a m.c. curve that rises to cut price = m.r., and is, in however vague a way, known by the firm to do just that, can it be explained why such firms do not expand their output almost indefinitely with a given plant.

Note that (*a*) and (*b*) are not in perfect markets at all. Such firms have quite imperfect knowledge of their "competitors" and of possible new customers. They do not stand, as Mr. Edwards so well puts it, in a "perfectly random relation to the custom of the market."[2] There is none of that geographical centralisation of buyers and sellers required for a perfect market—none of these conditions are necessary for perfectly elastic demand, which easily and often subsists outside perfect markets. Yet demand is still perfectly elastic, and without the postulated rising l.r.m.c.(p.a.) output would be infinite.

3. Let there be an ordinary, inelastic demand curve (much the most usual case, of course, in practice). Here the criticism seems partly to be concentrated in the exclamation mark at the end of the following sentence:

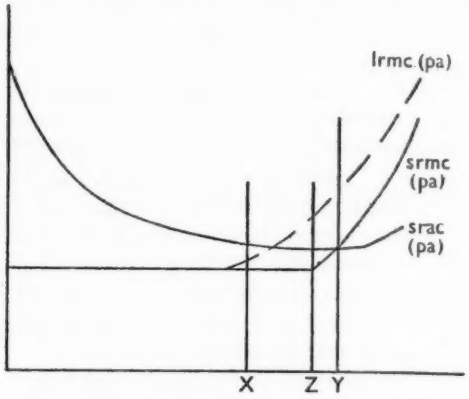
> "But if the validity of Mr. Wiles' analysis is granted at all, then the figure may be regarded as illustrating the effect of an *increase* in demand from the second to the first situation; so that the short-run (or p.a.) effect of a doubling of demand is to "make little difference to output, while price rises by some 43%!"[3]

[1] *I.e.*, I do not "consistently pre-suppose" (p. 670) goodwill. There being exceptions to it, I try also to include those exceptions.

[2] *Economic Record, loc. cit.*, p. 53. This seems to me an admirable and illuminating way of describing a perfect market.

[3] Edwards, p. 673. The figure of 43% is obtained by measuring the distance between the two demand curves in my figure (fig. 5, my p. 524); they were kept so far apart, of course, in order to avoid a cat's cradle of indistinguishable lines. Had I perpetrated such an error of visual presentation, would Mr. Edwards have withdrawn his criticism?

Is it suggested that I have said something untrue? Has Mr. Edwards never heard of full employment, or of the increasing inelasticity of supply of all goods? Does he suppose that the price rises which took place in 1945–51 produced great short-run increases in supply? If not, what is the exclamation mark for, and what is the criticism? Perhaps, however, I am myself to blame, since I did not emphasise enough that a shift in the m.r./m.c. cut from the *left* of *X* to the right of it, or from far left to near left, would naturally cause a very great increase in supply. Supply is not always inelastic; it is very elastic when there is surplus capacity. No statement could be more trite or acceptable than this; yet a l.r.m.c.(p.a.) curve, shaped as in the figure and



influencing entrepreneurial output decisions, follows from it with almost logical inevitability.

Mr. Edwards believes that an increase in demand when full capacity is already being worked will normally cause an "increase in output *pari passu*, supplied at an unchanged price not withstanding an associated increase in costs." [1] *I.e.*, it will be supplied at a loss if necessary, in order to avoid the loss of goodwill. Or "the entrepreneur will produce as much as he can, if the market wants it at the price chosen." [2] Surely entrepreneurs are not so irrational. If, as originally assumed, they are maximising long-run profit with the given plant, such behaviour is excluded by definition. They *must* then look to the

[1] Edwards, p. 674. He also goes into what the firm's reaction would be in the "long run," by which he means what I call total adaptation. I have no quarrel with him on this irrelevant question, and cannot understand why he thinks I have.

[2] Orally communicated.

l.r.m.c.(p.a.) or true m.c.(p.a.) of over-working their plant, and they *must* refuse business if this m.c. exceeds l.r.m.r. — a l.r.m.r. which has, of course, been defined to take account of goodwill. Yet the normal cost theory does hold that profits are maximised in the long run. Mr. Edwards is then simply contradicting himself if he thinks plant is worked over capacity without regard to (long-run) costs. He errs, it seems, because he has not grasped the important distinction between partial/total adaptation and short/long run. He can save himself from self-contradiction only by saying that profits are maximised with total but not with partial adaptation, and that the length of run is irrelevant. Logically unassailable, but surely not quite the normal cost theory, and certainly not true.

In other words, it cannot both be maintained that given plants are worked without regard to costs and that profits are maximised in the long run. For some plants remain given for a long period, and even those, the sole case really dealt with by Mr. Edwards, which secularly expand cannot therefore be maltreated at will in each successive short period. That would be to produce with l.r.m.c. (p.a.) greater than l.r.m.r. at each moment with each size of plant, and therefore to fail to maximise long-run profits during each short period. Consistent l.r. profit maximisation means that at each moment of time the existing plant is so used that l.r.m.r. = l.r.m.c.(p.a.). If at any moment of time or with any particular existing plant this is not so, profits are not maximised in the long run. Of course, in order to achieve this maximisation s.r. profits must never be maximised at all, in any short or long period. But that is neither here nor there.

Nor, again, is it any escape to say that m.c. is greater than m.r. in order to retain goodwill, for l.r.m.r., with which l.r.m.c.(p.a.) must at all times be equated, takes account of goodwill by definition. It follows, indeed, that l.r.m.r. may exceed the price charged, since a failure to sell now at that price loses the customer permanently. In that case, of course, l.r.m.c.(p.a.) should also exceed price, and this no doubt Mr. Edwards has very much in mind. But this is not at all to neglect costs, it is simply l.r. profit maximisation again. There is indeed one escape for those who totally reject the l.r.m.c.(p.a.) concept. They may make their entrepreneurs neglect it by making them indifferent to l.r. profit maximisation. Such an entrepreneur might well sacrifice his existing plant unconditionally to the retention of goodwill, and satisfy all his customers at low prices in booms while the bearings seize and the overtime bill is

quadrupled. Business behaviour is often "irrational," and I would certainly not rule out such a possibility. On the contrary, it is very attractive to me, and I find Mr. Edwards much too dogmatic in his insistence on profit maximisation. If we admit this possibility we reject one of the explicit and basic elements of the normal cost theory. On the other hand, l.r.m.c.(p.a.) remains a useful concept: the entrepreneur will continue to pay at least so much attention to it as is necessary to avoid losses. For all entrepreneurs at least do that.

4. Next Mr. Edwards rightly objects to my statement that firms "produce at the optimum point X," carelessly implying that they always do so.[1] This is not, of course, true. Firms seldom produce very far beyond it, since l.r.m.c.(p.a.) rises rather sharply, but may produce very far short of it. I would also like to substitute "rather sharply" for "very sharply," [2] since, as Mr. Edwards points out, there is always shift and Sunday working. These would cause a gradual, not a steep, rise in l.r.m.c.(p.a.). But the chief point remains, namely, that they make it higher than average direct cost.

It is a pity that Mr. Edwards should disagree so strongly with the one point that has now been widely accepted. For there is really nothing else to keep us apart. A rising l.r.m.c.(p.a.) curve, taking a different course from average direct cost—which is a much better name than s.r.m.c.(p.a.)—is compatible with nine-tenths of what Messrs. Edwards and Andrews have to say; and very illuminating most of that is. It would not disturb, for instance, Mr. Edwards' penetrating analysis of goodwill,[3] or Mr. Andrews' surely correct insistence on falling l.r.a.c.(t.a.) as the most usual expectation facing an expanding firm.[4]

C. It is a more grateful task to correct oneself. First, I should never have implied that all firms with perfectly elastic demand curves use the full cost principle. Farmers do not do so. There is no price and output policy covering all firms, and this is indeed one of the most radical errors of text-book economics. The full cost principle covers mining, manufacturing and distribution only: we shall refer to this as the "full cost sector." It still includes, of course, not a few firms facing perfectly elastic demand, as shown above.

[1] My p. 521. [2] My p. 524.

[3] *Economic Record, loc. cit.*, p. 56. Goodwill, he points out, is compatible with a nearly perfect market.

[4] *Manufacturing Business*, pp. 174, 176.

Secondly, the " normal cost " theory is superior to my article in its insistence that *firms in the full cost sector do not usually select price/output combinations : they select prices and their output is demand-determined. Output, then, is not the independent variable, and all concepts such as marginal cost and marginal revenue must be handled with care, because they appear to imply that it is.* A firm in the full cost sector tries to maximise profit if it chooses a price such that the quantity expected to be sold—which for simplicity we assume equal to expected output—raises l.r.m.c.(p.a.) to equality with marginal revenue, *i.e.*, to the increment in revenue expected from setting the price where it is set, and no higher. A painful and clumsy statement, involving two nearly non-operative concepts—l.r.m.c.(p.a.) and the elasticity of demand. Nevertheless, nothing more elegant or direct can be true.

The fact that output is not the independent variable is doubtless the reason why the " normal cost " school is so unconcerned with it. Mr. Andrews rightly emphasises the primacy of price over output, and so does Mr. Edwards. But that does not dispose of the question, it leaves it in mid-air. The former never discusses the determinants of output, and although I have succeeded in extracting some determinants from the latter (in Section A above), they are clearly not the focus of his interest. Furthermore, had they faced the question of output determination squarely they would have had to use the distinction between the fixed and the varied plant : for quite obviously the influence of output on costs will differ according to whether there is partial or total adaptation. The " normal cost " school seems always to blur this distinction, which is *not* the same as short and long run.

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DEVELOPMENT CHARGES AND THE COMPENSATION-BETTERMENT PROBLEM—A REJOINDER

MR. MUNBY'S reply to my paper on development changes makes a number of effective points, so that what I have to say here is less a rebuttal than a commentary upon his contribution. I shall follow the order of his discussion, using the same headings.

DISTRIBUTIONAL CONSIDERATIONS

The point at issue here is whether or not one's judgment about the fairness of fixing compensation in terms of 1947 values must depend on one's expectations concerning the future movement of the price level. Mr. Munby points out that landowners can sell their land and thus escape the possibility of receiving the 1947 value of such development rights as may, in the future, be taken from them. By shifting into some other asset which is a hedge against inflation they can, if they choose, thereby avoid a situation where the amount of their loss depends on what happens to the price level. Thus the White Paper proposals are analogous to the nationalisation of the railways, where owners compensated with Government stock were able to shift from them into equities if they so desired. The loss suffered by landowners may therefore be judged by the effect of the scheme on the current market value of their property.

TOWN PLANNING AND SOCIAL COSTS

Just as we prefer a doctor to understand the working of the body and the nature of the disease before he chooses and administers medical treatment, so, I believe, must good town planning be based on an analysis of divergences between social and private costs. Unfortunately no such Pigovian analysis has been made, and all too often the argument in favour of planning rests only on the wisdom of hindsight, the disregard of opportunity costs and æsthetic intolerance. We are therefore woefully ignorant in this matter. Since, however, the price mechanism ensures that many people get some of what they want, land values must have *some* significance. This is the basis of my *ceteris paribus* remarks on land values which disquiet Mr. Munby.

As to shifting value : I do not know whether town planning in general increases or decreases land values, and did not intend to imply the latter.

A Free Market in Land

(*a*) In this section and later on Mr. Munby uses the term development value to mean "the maximum price a developer would pay rather than go without the land." It should be noted that the customary definition is value with the right to develop *minus* existing-use value.

(*b*) Mr. Munby's argument here is couched in terms of possibilities rather than probabilities.

Floating Value

Mr. Munby argues that what the Uthwatt Committee meant (or ought to have meant) was not that land was bought at excessive prices but that it was offered at excessive prices. If so, my argument that modification of the 1919 compensation rules would have met the problem still stands, since the market-value basis of compensation requires prices paid, not prices asked as evidence of value.

We agree on the possibility of developers paying excessive prices; I have given reasons for supposing this to have been infrequent. The proposed zoning for residential purposes of more land than necessary demonstrates over-optimism (or ignorance) on the part of local authorities, not developers, and would not necessarily have made asking prices higher than would a less extensive residential zoning. On the other hand, developers did not regularly obtain land excessively cheaply: building was not all that profitable.

Development Charges

Mr. Munby's argument may be stated as follows. Consider a development on a property purchased by the developer from a landowner where the value of the property upon development conforms to the expectations of the developer when he bought the property. Then this value may be divided into the following parts:

(*a*) developer's profit;
(*b*) cost of development;
(*c*) developer's surplus;
(*d*) landowner's surplus;
(*e*) value to the landowner of the undeveloped property;

where (*d*) + (*e*) is the price paid for the property by the developer. Mr. Munby says in effect that the development charge would be

slightly less than (*c*) + (*d*) so that it would not prevent development.

A point to be noted here is that the institution of development charges might lower (*e*)—in cases where the landowner himself contemplated chargeable development. Even so, however, (*e*) could well exceed existing-use value in many cases, so that the development charge could be greater than (*c*) + (*d*) and hence check the development. This possibility, I believe, manifested itself not so much in the inability of developers and landowners to agree on a price in negotiations as in the failure of many owners of developable land to put it on the market at all while the scheme was in force. A farmer who does not wish to retire will be very unwilling to sell all or part of his farm at existing-use value, and the landlord of a tenant farmer finds it very difficult and expensive to end the tenancy.

This leaves the cases where the developer and landowner are one and the same, so the problem of willingness to sell at existing-use value does not arise. On p. 307 I listed two permanent reasons why in such cases the development charges were assessed at less than the surplus, but later implied that they were greater and therefore restrictive. The restrictive effect in the case of development by the owner is limited to the other factors I mentioned (summarised by Mr. Munby in his points (1) and (3)), and I should have said so.

In his exposition Mr. Munby makes a " distinction between the profit that the developer expects from the outlay of capital in this particular form of enterprise and the surplus that accrues to him if he can obtain land at less than development value." In view of Mr. Munby's definition of development value, this statement presumably uses " profit " in its opportunity cost sense—*i.e.*, as reflecting the total gain, including surplus, which the developer could get from an alternative equally risky development project. Thus developers' surpluses cannot normally occur; they must be exceptions. It follows that Mr. Munby's distinction is not very helpful.

If, on the other hand, Mr. Munby means by profit simply a normal rate of interest on the capital invested by the developer, the developer will not develop unless he gets some surplus, and a development charge equal to the surplus would remove all his incentive to develop.

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REVIEWS

A Review of Economic Doctrines 1870–1929. By T. W. Hutchison. (London: Oxford University Press, 1953. Pp. v + 456. 30*s*.)

For this erudite study Mr. Hutchison has chosen the sixty years during which modern economics was born and grew to maturity. His boundaries are set by the appearance of the marginal-utility doctrines and by the Great Depression. Between these two terminal dates the literature of economics showed a vast increase; the subject became a respectable, indeed an increasingly popular, academic study; and from being an essentially English science it became international. If a unifying feature is sought in the trend of theoretical development during this period, it can be found only in the marginal principle, or, more generally, in the increasing attention paid to the behaviour of the individual. From being a study of the origin of the wealth of a community, or of the distribution of the product among the broad classes which had concurred in its production, economics became during the period under review the study of the working out of the economic principle, the principle of choice, *per se*.

Unfortunately, this unifying principle, readily discernible though it is, can be clearly depicted only on a broad canvas. It is not sufficiently or uniformly characteristic of all the vast volume and variety of work with which a book specifically devoted to this period alone must of necessity deal fully and exhaustively. Consequently, Mr. Hutchison finds himself obliged to adopt a variety of techniques to enable him to describe work in economics during the period of his choice in sufficient detail without at the same time descending to a mere encyclopædic cataloguing of each and every writer, book or article. The way he chooses to get out of his difficulty is ingenious. The book is divided into three parts. After a brief introduction, describing the state of political economy in England after 1870, the first part deals in the main with individual writers. Mr. Hutchison has picked out seventeen economists of the last century for detailed treatment, giving to nearly each one a separate chapter. There are six British writers, four Americans, two Scandinavians, three Austrians, one Frenchman and one Italian. In addition, this part contains two general chapters on economics in Germany and Austria, dealing with the

historical school and with developments in both the literary and mathematical forms of marginalism.

In Part II Mr. Hutchison devotes four chapters to the study of certain topics, grouped under the heading "From 'static' to 'dynamic' Analysis." It includes a discussion of the development of welfare economics and the controversy over pricing in a collective economy; the economics of the firm, the consumer and the market, *i.e.*, the beginnings of the theory of imperfect competition; profit, uncertainty, expectations, interest and money, bringing the reader to the threshold of the "macro-economic" analysis of the thirties.

The final part contains two chapters on the theory of crisis and cycles, one before 1900, the other after; and a third chapter—somewhat loosely tacked on—which traces the economists' views of the problem of unemployment in Britain from 1885 to 1929. A conclusion rounds off the story by touching upon the contribution of statistics to further advances in economic science.

It will be seen from this brief account of the plan of his work that Mr. Hutchison has tried to cover a great deal of ground, and to cover it thoroughly. It can be said at once that there is no other work of similar size in which the professional student can find so much in so convenient a form. Indeed, nothing short of the *Encyclopædia of the Social Sciences* or the *Handwörterbuch* contains a comparable wealth of material, and even then not always in such detail. The first part, considerably more than half the book, is, as a whole, the most successful. Mr. Hutchison deals here with writers who, he claims, constructed unified, comprehensive systems of economic principles. This method is useful in filling gaps which tend to occur in more comprehensive (and more sketchy) histories of doctrine. There is, for example, a useful chapter on Edgeworth, another on Sidgwick and one on J. A. Hobson. Simon Newcomb finds a place, as does Veblen, though oddly paired with J. B. Clark. Wicksell is dealt with comprehensively, and so is Cassel. The "giants" are there, of course: Jevons and Marshall, Wieser and Böhm-Bawerk, Walras and Pareto. The net effect, however, is one of a series of essays, loosely strung together by the three general chapters. The main criticism of this part is that it deals in a somewhat indiscriminate fashion with so many authors that the uninitiated reader will inevitably find it difficult to distinguish the major from the minor contributions. An approximately equal number of pages are devoted to Sidgwick, Wicksteed, Edgeworth, Hobson and Wieser, to Newcomb and Irving Fisher (jointly); and somewhat less than

double the number to the joint treatment of Wicksell and Cassel. Menger, Pareto and Böhm-Bawerk get slightly more; Jevons and Walras about half as much again; and Marshall nearly three times as much. Apart from the space rightly reserved to Marshall, this high degree of uniformity—at least quantitatively—in the treatment of such diverse authors is not best designed to give the reader a sense of proportion.

There is, however, considerable difference in the understanding and sympathy which Mr. Hutchison metes out to his subjects. Mr. Hutchison, clearly, has his likes and dislikes. Jevons is among the former, Marshall among the latter. On the whole, Mr. Hutchison seems more at home with the Continental than with the English formulation of marginalism; and the chapters on Menger and Walras, for example, are, probably for that reason, both more acute and more readable than most. The chapter on Marshall, though more thorough, has a somewhat carping flavour. It is curious that Mr. Hutchison, who shows great insight into the deeper currents of thought which have led in the last two decades or so to the generalisation of the theory of the market and to a return to the "macro-economic" analysis of the classics, should fail to give due credit to Marshall, in whose system so many of the germs of these later developments can be found.

There are some useful details in these chapters. Irving Fisher is rightly described as one of the pioneers of the national-income approach. Veblen is treated with rare understanding, in particular in regard to the wider framework of cultural criticism in which his economic ideas are set. Schumpeter, with whose early work Mr. Hutchison deals systematically, but who is also referred to incidentally on numerous occasions, gets the credit he so richly deserves. There is here possibly a hint of a further study; and Mr. Hutchison's success in dealing with Schumpeter makes one eager to see a more extensive treatment by him of that author.

The final two parts present more connected stories, and are therefore, at first sight, more rewarding subjects for the reader. Unfortunately, Mr. Hutchison has tried to cram so much detail into a relatively small space (and has used extensive quotation so frequently) that the path is not at all smooth. This is particularly so in the second part. It is tempting, as Mr. Hutchison has done, to weave into a connected pattern the many diverse strands: welfare economics, the planning controversy, oligopoly and imperfect competition, interest, money and the modern theory of aggregates. But to do this successfully requires not only the knowledge which Mr. Hutchison has in such abundance, but,

above all, a much more decided, not to say dogmatic, point of view on the nexus between these topics than Mr. Hutchison possesses—or at least allows to appear. As a result, this part falls between two stools—it is neither the brilliant short essay full of audacious speculation which it might have been, nor is it long enough to be an adequate account of all the major work in these fields.

The third part is more successful; the subject is more compact, and Mr. Hutchison is more selective. Even here, however, his achievement is somewhat marred by too much and too varied subdivision—by author and topic—which leaves a slight impression of a patchwork quilt. The final chapter, on doctrines of unemployment in Great Britain in the years 1885–1929, is probably the only attempt to date to deal systematically and from the point of view of *Dogmengeschichte* with a particularly fascinating topic. But Mr. Hutchison does little more than whet our appetite. His chapter is a useful outline, but no more, of what such a study might be: it would be particularly satisfactory if he were to provide that further work himself.

This book is unlikely, and probably not intended, to help the general reader to a better understanding of the development of modern economics, largely because of the almost insuperable difficulties of selection and arrangement. In part, however, Mr. Hutchison has handicapped the reader by a somewhat involved style in which qualifying clauses abound. It is, nevertheless, a very useful book for the professional economist, more particularly one already interested and versed in the history of economic theory. More advanced students might also benefit; but they would need to guard against occasional idiosyncracies about individual economists, particularly as these are rarely explicit.

E. ROLL

London.

Problems of Economic Union. By J. E. MEADE. (London: Allen & Unwin, 1953. Pp. 102. 9*s.* 6*d.*)

THE economic union which Professor Meade discusses with his usual lucidity in the three lectures reprinted in this volume is a union between countries trying to increase their economic efficiency, and so their standard of living, by forming a single integrated market. What he wishes to establish is the minimum surrender of economic powers to the union authority that must

then take place and the maximum range of functions that can be retained by national governments. This theme is discussed largely at the level of first principle, without much appeal to the history of experiments in federalism or to the difficulties recently encountered in efforts to bring about closer economic integration in Western Europe. The celebrated trio, Stikker, Pella and Petsch, do not appear on the programme, and the mæstro, Schuman, is allowed no more than a couple of bows. Instead, Professor Meade concentrates on demonstrating that the formation of a single, integrated market must impose severe limitations on the domestic freedom of action of individual governments in commercial, monetary and budgetary policies; and that the extension of the common market to labour and capital would oblige national governments to keep in line with one another in their social and economic policies for the redistribution of income or in their choice of weapons for the maintenance of internal financial stability.

Now while it is certainly salutary to discuss economic union *in vacuo*, if only to see how one thing leads to another, the ordinary man is bound to ask himself whether the motives to the union are likely in practice to be exclusively economic, whether some allowance must not be made for the circumstances surrounding the union (there is no mention of the dollar problem), and whether wide differences in economic potential may not also exercise an important influence on the principles to be adopted. A union in which the United States accounts for over half the total output is unlikely to result in the same distribution of authority between member-states and a supra-national body as one in which economic power is more evenly distributed: a point of some importance in any proposals for a common budget, whether for defence or economic development, since the United States would have to contribute more than half the total without enjoying a majority vote.

Professor Meade is far from thinking of economic union in terms of common budgets. Even in his Appendix on the economic problems of Atlantic Union rearmament, he gets no further than "jointly agreed programmes" and "marginal adjustments . . . by common agreement." This may be what he calls earlier "institutionalised co-operation"; but it is not union in the sense in which the Schuman Plan involves union. Like the Schuman Plan, Professor Meade means by union the creation of a single free-trade market. But it would be possible to think of other forms of union, involving the creation of a com-

mon preferential area, monetary system, or fund for joint projects, that would be easier to bring into existence and require a less dramatic surrender of national powers. Surely all that one can talk about, short of complete federation or complete *laissez-faire*, is *closer* economic union? And surely also one must decide at the outset what part is to be played by market forces and what part by government policy in the process of integration? It is hardly surprising that an exposition that begins by laying all the emphasis on free trade should end by envisaging circumstances in which "the union authority might positively require the socialisation or at least the social control of certain industries." A group of states favouring government regulation and control could hardly agree to forswear all regulation and control of their foreign trade.

When he comes to discuss the balance of payments, Professor Meade argues that, in the absence of direct controls, it would be necessary to have variable exchange rates. He points out that there would be greater sensitivity to exchange-rate variations under conditions of free trade, but does not remind us that the union would not necessarily embrace a high proportion of each country's total trade. This part of the discussion, which comes down in favour of freely floating exchange rates, backed by exchange equalisation accounts, is conducted more in terms of the I.M.F. than of the closer grouping of countries within the E.P.U.

More than half the chapter on a common market in labour and capital is taken up with a demonstration that free trade in goods is not enough to equalise incomes in countries with a different factor endowment. This is argued with a good deal of ingenuity, however rough on an audience trying to take it in for the first time. But is it necessary to treat the Letner-Samuelson proposition with such respect? Would it not have been enough to point to the difference in earnings between one American state and another and free a few pages for the vast subject that follows? The book is already so tantalisingly brief, and develops a theme so far-reaching yet neglected, that one grudges even a most accomplished piece of economic reasoning when it holds up the main line of argument.

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Glasgow.

Trade and Payments in Western Europe. A study in economic cooperation 1947–51. By W. DIEBOLD. (New York : Harper Brothers for the Council on Foreign Relations, 1952. Pp. vi + 488. 40*s*.)

MR. DIEBOLD has written an admirable history of the negotiations which led up to the formation of E.P.U. He succeeds in threading his way through the series of payments agreements that preceded E.P.U. without wearying the reader with detailed exegesis of the various texts. The extent to which he has been able to make the negotiations, which spread over the years 1947–50, come alive is a tribute to the extent to which the various Governments concerned felt it advantageous to them to disclose to the Press what they were seeking to attain while the negotiations were still in progress and to the general interest in the subject shown at the time which justified the Press in printing such voluminous despatches on the subject.

It is, no doubt, natural that Mr. Diebold should have traced a design which makes the earlier payments agreements appear almost inevitable predecessors of E.P.U. Moreover, the concentration on narrative rather than analysis prevents him from entering into detailed analysis of why the negotiators should have allowed themselves to be led down what, at this distance, appear to be blind alleys. It is, for example, difficult at this distance to understand how it was that the negotiations in 1949 for the second payments agreement should have generated so much heat, and Mr. Diebold does not really help us. The extent to which those negotiations were overshadowed by the impending devaluations and by the underlying economic pressures which led to those devaluations is hardly developed at all.

There was and is in all the discussions of arrangements for "liberalisation" of trade within Europe, and the financial arrangements to make such liberalisation possible, an unresolved dilemma. Europe is not, and cannot hope to be, self-sufficient in trade, even if we include with Europe the areas of the world where trade can be financed with European currencies. Would attempts to free intra-European trade make more difficult the flow of goods and services between Europe and the rest of the world, particularly the dollar world? Would the easier European markets attract exporters who might in the long run be better employed in developing their markets outside Europe? Mr. Diebold records these controversies in the costumes which they wore four or more years ago. He does not push his analysis of the various

positions far enough to disclose any judgment of his own. Perhaps, where so many are prepared to pronounce, it is more helpful to have this objective narrative of how one part of the argument actually proceeded.

Mr. Diebold resurrects some of the fears that were current within Europe four years ago that the greater freedom of trade would damage the social fabric :

> " The division of labor is necessary, and so is the growth of foreign trade. But, as we are told in the Bible, there is a time for everything, and so likewise all things serve a good purpose only if kept within due limits. . . . Even under the best of conditions, the introduction of a regime of free, or almost free, international trade would increase the instability of our economic system to a degree that would soon undermine its very foundations,"

said a journal published by the Association of Italian Joint Stock Companies. It is not fair to hold against the authors of this article the fact that no such catastrophe has overtaken them, even though in practice Italian liberalisation has been very substantial; the outbreak of the Korean War changed many things. Indeed, with a little bad luck E.P.U. itself might never have come into existence; the negotiations for its formation were hardly completed when that war broke out. Had the Governments then realised the effects which that conflict would have on their economies, it is at least doubtful whether they would have had the courage to go ahead.

Mr. Diebold's narrative runs for a year beyond the formation of E.P.U. and covers therefore the major part of the first E.P.U. crisis—Germany. Again, as a narrative it is admirably done, with some account of the institutional and organisational experiments practised by O.E.E.C. during the handling of this affair, particularly in connection with the organisation of advice to the German Government on the granting of import licences.

FRANK FIGGURES

London.

Britain's Economic Problem. By C. A. R. CROSLAND. (London : Jonathan Cape, 1953. Pp. 224. 12*s.* 6*d.*)

IN this essay Mr. Crosland argues strongly for a change in Britain's external economic policy. The essay is marked by a moderation of both temper and judgment which make it attractive, while the rejection of many contemporary criticisms of

government policy is highly provocative. Mr. Crosland begins with a snapshot of the problem in 1945, and goes on to show how matters moved over the next seven years. He shows that the response of exports exceeded expectations, and yet an acute problem remained in 1952. Pointing to the sharp increase in exports on the one hand and the steady control of imports on the other, he dismisses inflation as an important cause of continued imbalance. For this latter he regards the deterioration of the terms of trade as mainly responsible, for that in itself more than doubled the serious gap of 1945. Additional, though subsidiary, responsibility is shared between the American recession of 1949 and the dollar drain of the sterling area. In any assessment these factors must be given high place. By themselves, however, they provide a partial picture. It is a pity both here and later that Mr. Crosland so largely divorces the external from the internal side, and so largely neglects the internal. The division between domestic and international is at best artificial; each has implications for the other. To complete his picture Mr. Crosland, who dismisses inflation and ignores social policy, should at least have taken into account the considerable drain on resources due to government expenditure abroad on relief, occupation, military and administrative matters which exceeded £1,500 million over the period 1946–51. The cold war has much to answer for once it is realised that total defence expenditure is almost double net capital investment. The record is good, but all the complications did not come from abroad.

Mr. Crosland concludes from his analysis that the crises of 1947, 1949 and 1951 were symptomatic of a much bigger movement, which cannot be met by tinkering with disinflation, devaluation or high interest rates. Nor will salvation be found in " some kind of convertibility." For the external problem has its origin in " a major revolution, of the kind that occurs perhaps once or twice in a century, in world economic relationships. Britain has finally lost her industrial leadership to the United States, and that country now bestrides the world in so colossal a fashion that the dollar and non-dollar worlds can reach no proper balance " (p. 202). With a sufficiently radical long-term policy Mr. Crosland thinks that the structural adaptation might be made, not otherwise.

The " major revolution " to which he refers is composed of three separable though related parts. First, there is the terms of trade change due to a world-wide shortage of food and raw materials. Mr. Crosland does not join the extremists here. Even so, he puts the probable export target for the 1960s at 31%

greater than the 1951 volume (or 240% of pre-war) if Britain is to maintain the 1951 level of imports and earn a surplus of £300 million. Such an expansion is thought by Mr. Crosland to be possible, providing there is sufficient investment in those products for which world demand is rising, for which we have a comparative advantage and for which the import content is low, *i.e.*, in coal, steel, chemicals, metal and engineering goods. The increases involved in each of these would be very substantial: for coal production, demand would be nearer 300 million tons than the 240 million tons now envisaged; for steel, output would have to be nearer 25 million tons than the 20 million tons planned for the end of the 1950s; for engineering goods, output would have to expand by something like 40% of the 1951 level. No one conversant with the magnitude of change registered either in the inter-war period or since 1945 in the industrial structure of the United Kingdom will be prepared to dismiss such expansion as impractical. Nor can it be said that Mr. Crosland's projections are wholly unreasonable. Nevertheless, it is a very different matter when adjustments are being made to an existing situation than when they are being made in anticipation of a given situation. Mr. Crosland recognises that those who have to cover their costs—and this includes nationalised industries—will not plan for a capacity which might well turn out to be excessive. But he adopts something akin to the attitude of the military commander who cannot be bothered with the niceties of alternative cost, for he must be sure of sufficient strength of the right sort at the right time, or else the battle will be lost. "The penalty of over-expansion is merely surplus capacity, the penalty of under-expansion is unemployment and impoverishment" (p. 116). Mr. Crosland nowhere recognises the complex issues involved in the field of industrial organisation of any such concerted policy as he proposes. This again is an internal matter, but it does bring up the detailed relationship between Government and industry in the making of innumerable decisions where scientific exactitude would be rarely possible and men of goodwill and independent minds would judge differently. And he tends to think of surplus capacity as though it might be put "in mothballs," like the American reserve fleet without suffering obsolescence, and this in those industries where technical change is likely to be most marked. A study of problems in, say, the cotton industry would dispel any illusions of the ease of formulating in detail and applying a concerted policy. How would Mr. Crosland cope?

The remaining two parts of the "major revolution" are the

dollar shortage and the instability of the American economy. Here again Mr. Crosland makes a very fair sketch of the position, realising that the America of to-day is a vastly different place from the America of Hawley-Smoot and the 1933 devaluation. He feels that the American tariff no longer matters much, and in the absence of really large-scale foreign investment the dollar shortage will persist at least until the exhaustion of American resources increases her dependence on imports. His solution is, therefore, a continuance of discriminatory restrictions on dollar purchases while productive capacity in the non-dollar world is increased. By agreement if possible, by compulsion if necessary, the sterling area must be brought into dollar balance. Mr. Crosland thus raises major issues of policy. These cannot be debated here, though two comments may be permitted. In the first place, Mr. Crosland's conclusions would be more appropriate if the United States was already " doing her worst " in both trade policy and cyclical instability. He ignores the possibility of his policy leading to a deterioration in the international setting. In the second place, apart from this short-term risk, a high level of world trade is needed in order to sell the exports he thinks necessary, as it is almost certain that Britain could not raise her exports mainly by out-selling Germany and Japan. If, therefore, by the 1960s American imports were increasing and the volume of world trade was high, all his problems would be solved, providing Britain's economy proved to be as flexible as Mr. Crosland's scheme requires and adequate currency reserves were available. These are the crucial conditions for the solution of Britain's economic problem.

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Whither Europe—Union or Partnership? By M. J. BONN. (London : Cohen & West, 1952. Pp. 207. 15*s*.)

THIS book might be recommended to two sets of readers. It might be recommended in the first place to those who do not recognise the difficulties of creating a genuine union in Europe and the limitations of any such union. It is true that these difficulties and limitations are now much more widely recognised than they were a few years ago, but to the remaining adherents the book would make salutary reading. Dr. Bonn neatly disposes of the false analogies of the America of 1776 and the Europe of the *Zollverein*. He shows that the essential prerequisites of a modern Customs union were absent. Above all, he stresses the

view that a drive for union due to internal fears and external pressures does not provide the basis for a genuine union. For that he believes "the passionate yearnings of the peoples of Europe for a common fatherland" only is sufficient, and this is lacking. "It will take a long period of intimate, confidential co-operation in defence, in economic and administrative services, before a profound sentiment of European unity will sweep over the nations."

The book might be recommended in the second place to those wanting a survey of the growth of the Atlantic Alliance which, at one and the same time, contributes to European integration and reduces its importance, strengthening the United Kingdom's determination to stand apart, and thus giving any future European constitution an exclusively Continental twist. Dr. Bonn devotes a chapter to a consideration of the main step so far taken towards mid-European integration, namely the Schuman Plan. Here Dr. Bonn is perhaps not as helpful as he might have been. It is true, as he says, that the plan was conceived in a panic, and it is likely, as he suggests, that in its operation it will fall short of the initial objectives, political and economic. The danger of cartel-mindedness is certainly a real one. Even so, the Nato-Schuman method has several advantages and is not necessarily inconsistent with Dr. Bonn's requirements. Had he treated these possibilities, his book would have given a less negative impression and been more useful to those interested in the next step in European integration.

D. J. MORGAN

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The Logic of British and American Industry. A realistic analysis of economic structure and government. By P. SARGANT FLORENCE. (London: Routledge and Kegan Paul, 1953. Pp. xiv + 368. 28*s*.)

PROFESSOR SARGANT FLORENCE is one of the pioneers in the field of realistic research into the problems of industry. In this book he brings together the substantial research results of his own work as well as of his disciples. He also draws on the by now extensive empirical material available on the structure of industry, especially in the United States but also in Great Britain. His book, while it does not contain new research results, presents this wealth of material in a new setting and with an attempted analysis. The setting chosen by the author is his early book on

The Logic of Industrial Organization published in 1933 and reviewed by Sir Douglas Copland in the June 1934 issue of the ECONOMIC JOURNAL. Although a substantial portion of this book has stood up to the test of time, this new edition can be regarded for all intents and purposes as a new work.

The range of subjects touched upon by the author is remarkable. Chapter 1 ("The Structural Approach") gives the background of basic statistics on such matters as distribution of the working population, size distribution of plants and firms and the pattern of industrial location in the two countries. Chapter 2 ("Logic and Fact of Industrial Structure") discusses the interrelationships between size, efficiency and location, following largely the author's 1948 book on *Investment, Location and Size of Plant*. Chapter 3 ("The Relations of Industry and Consumer") deals with such widely varying topics as distributive margins, market research and monopolies. Chapter 4 ("Relations within the Modern Firm, Management and Top Government") gives a good discussion of management organisation and contains some apt comments on management as a limiting factor to the size of enterprise. Chapter 5 ("Government of Free Enterprise Capitalism"), to my mind the best of the book, discusses with a wealth of detail who governs the modern joint-stock company. Chapters 6 and 7 are more tentative, and not backed by previous research results of the author. Chapter 6 on "Nationalization, Co-operation and State Control" discusses the relative importance of nationalised industries and co-operatives, the reasons for their existence and their form of government. Chapter 7 is on "The Stimulus to Labour, Investment and Enterprise." It starts off with a fragmentary discussion of incentives and then discusses the types of leaders in large-scale enterprise, as well as their education and selection.

Briefly, the main theme underlying the whole discussion is that the structure of industry, given the technical and distributive conditions, is to be regarded as logical if it results in maximum efficiency, measuring efficiency in turn in terms of minimum costs, maximum profits and maximum utility and satisfaction. The hypothesis of the logical efficiency of large-scale production in large plants, firms and localisation is then formulated by the author on technical grounds. However, the actual facts of industry often appear, according to the author, to negate this hypothesis, logical as it may be on technical grounds, owing to the operation of economic, psychological and sociological factors. The structure of industries as shaped by all these factors does in

turn determine the form of government in the different types of industries.

The above theme, familiar to readers of his 1933 work, emerges, however, largely from a short note of the author on his research methods and somewhat obscurely from Section 6 of Chapter 2 rather than from the general trend of discussion in the book. Indeed, the key chapter (Chapter 2) is unhappily a weak one, and in many ways misleading. The reader gets the impression from the substance of the book, that the author firmly believes in the inherent logic of the efficiency of large-scale production and that he is satisfied that the evidence which he adduces proves his point. But it seems scarcely appropriate to speak of the logic of large-scale production as the rule when in so many cases the logic of small-scale production is equally arguable. Is it not really the case that the balance of advantages will differ from industry to industry?

There is a second highly interesting general theme underlying the discussion of detailed problems: the similarities and dissimilarities of various features of British and American industry. Some of the similarities, for example on size distribution of plant, or pattern of location, are truly remarkable. Some other similarities noted by the author, for example in distributive margins or trade-union relations, do not appear as yet well proven on the basis of evidence produced. In one case, that of integration, the author appears to be wrong in suggesting similarity. The whole problem of integration and its effect on size and efficiency is inadequately treated in the book. Integration is treated as the opposite of both specialisation and of standardisation, a somewhat unhelpful approach. There are, however, many differences in integration between British and American industry, irrespective of whether we take the traditional or this peculiar interpretation of integration. Indeed, an interesting problem, not discussed in the book, would be to analyse how similarities in size structure and the like can be reconciled with known dissimilarities in vertical integration, in the British and American textile industries, for example, and in many others.

These points of criticism indicate possible small blemishes in an interesting and stimulating book which could be read with benefit by both the undergraduate and the professional economist. It is just as well, however, to warn the reader that this is a difficult, and in many ways an irritating, book to read. This is due to certain tricks of style, to constant references to what he said on the subject in 1930s; to his almost Teutonic pleasure in inventing

new classifications and new names for categories; to the somewhat confused organisation of the material—three pieces of empirical evidence relating to the same subject in Chapter 2 are given on pp. 53, 62 and 67, respectively; the effect of localisation on size and efficiency is discussed on p. 70 and then again on p. 83; summaries at the end of rather difficult and diffuse chapters, such as para. 6 in Chapter 2 or para. 7 in Chapter 6, often introduce the reader to new ideas and feed him with new statistics. There is far too much material crammed into the book to make it easily digestible.

One further point will irritate the serious reader: Professor Florence's constant disparaging references to more theoretical economists. While from time to time he scores a point, on the whole he does not emerge victorious. I cannot find anything startling or new in his so-called structural approach which should distinguish him from his erring fellow economists. Indeed, so far as I am aware, it is by now a widespread custom to start applied lecture courses on the structure of industry by presenting descriptive material, which is all that the " structural approach " seems to imply. Other examples of lack of regard for theory could also be mentioned. The author's difficulty in defining an industry without attempting to relate it to markets (so beautifully done in Mrs. Robinson's recent article in the September 1953 issue of the ECONOMIC JOURNAL) is particularly striking. Incidentally, his contention that the " organizations which add up to an industry are plants not firms " is a debatable one, and appears to be true only in the purely statistical—Census—sense. In this whole discussion in Chapter 1 Professor Florence seems to be tilting at windmills.

It is to be hoped that in a later edition of the book some of the statistics will be brought up to date (unhappily for the author, the bulk of the results of the three post-war Censuses on Population, Production and Distribution have become available only a few months after the publication of the book); some minor errors or omissions of facts and statistics might also be corrected. It is, for example, difficult to reconcile with the facts the contention that " manufactures have in both countries grown only slightly in terms of manpower " over the last few generations (p. 6). In various places (for example, pp. 13, 68, 69) there are references to horsepower figures from the 1935 Census instead of the 1930 Census. On pp. 18–19, where the classification of industries is discussed, some reference to the Standard Industrial Classification, in force after all since 1948, would be appropriate. The author's

profound knowledge of the literature, as illustrated by the plethora of footnotes, would have justified a selected bibliography at the end of the book.

L. ROSTAS

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Demand Analysis. A study in econometrics. By H. WOLD in association with L. JURÉEN. (New York: John Wiley (London: Chapman & Hall), 1953. Pp. ix + 358. 56*s*.)

This book is a happy example of econometrics as it should be: the union of common sense and powerful mathematical techniques in the analysis of important aspects of the real economic world. Its quality is sufficiently guaranteed by the distinction of its authors and of the Swedish school of statisticians to which they belong. They show, as might be expected, a comprehensive first-hand knowledge of work on their subject done all over the world; they express themselves in English which, while occasionally turgid, is better than that of most English-speaking writers on econometrics. The subject invites a comparison with the massive work of Richard Stone, *The Measurement of Consumers' Expenditure and Behaviour in the United Kingdom, 1920–1938*. The two books cover a very similar field, but Wold and Juréen use only a limited amount of statistical data as illustrations of their methods, whereas Stone's book is mainly concerned with the presentation and systematic analysis of statistics of consumers' expenditure. On the other hand, Wold and Juréen give very much more space to the mathematical development of their subject and the discussion of rival statistical techniques. The two works should therefore be in joint demand.

The central section of the book (for which Professor Wold is responsible) is highly mathematical, but the quality of the exposition is such that the argument can be grasped by a reader with a sound mathematical background, even if he has not lately hacked his way through the jungles of *Econometrica*. There are occasional statements of unproved results, but in general the argument proceeds systematically on its way from first principles, and is assisted by extensive cross-referencing. Part II is a development of Pareto's theory of preference fields; Part III is concerned with the theory of stationary processes; while Part IV deals with least-squares regression analysis. Sets of exercises are provided on each of these Parts.

Feeling, no doubt, that the book would have too narrow a public if it appealed solely to mathematicians, the central section

is preceded by Part I, which is described as a "broad summary of the material, written with restricted use of technical terms, and stressing the general lines of development in demand analysis and related fields." This is, on the whole, less successful. It contains quite enough technical terms to make it unintelligible to a reader who has not previously studied the literature of the subject; and it is on the whole heavier going than the mathematical parts which follow it. Nevertheless, it repays careful reading, because of its discussion of some of the controversial problems of demand analysis. Professor Wold stresses the importance of the external, non-statistical knowledge of the structure of cause and effect, which determines the type of regression analysis to be undertaken; and he defends the traditional simpler types of regression analysis against some of their rivals. (The sensitiveness of estimates of elasticity to differences in the type of regression is strikingly illustrated on p. 218.)

Part V, based on the empirical work of Mr. Juréen, has three chapters. The first is an analysis of Swedish family budget data for 1913, 1923 and 1933, in order to derive income elasticities of demand. This contains some interesting and very consistent results based upon Törnqvist's special form of the demand function. The second chapter is concerned with the demand for food, analysed with the help of market statistics from 1921 to 1939. In some cases, "conditional" regressions are employed—either fixing one of the elasticities on the basis (*e.g.*) of the budget data, or fixing the ratio of the income to the price elasticity. In contrast to Stone, the authors do not eliminate trends, though they correct for the changes in population. The explanatory variables are decided by common sense and judgment, and one misses the great apparatus of bunch maps which other writers use to assist their judgment of when the regression analysis has gone far enough.

The final chapter employs the data of the preceding two, firstly, to predict consumption in 1949/50, and secondly to forecast the food demands of the Swedish economy over the next twenty years. The first prediction can be compared with the fact, and one is left in doubt as to whether to be impressed by the closeness of the prediction (involving a bridge over the years of war and rationing) or to be alarmed by the possible errors it reveals. Thus the predicted increase in *per capita* consumption of meat was 1% (over 1930–39); the actual increase was 3%, though the predicted distribution over pork and other meat was sadly astray. On the other hand, the predicted increase for eggs was 6%, and for butter 7%; imperfect statistics give an actual

rise for eggs of 42%, and in butter the rise was 28%. Such errors are enough to deprive the data of much significance for the determination of policy for example, in derationing foodstuffs. Our best instruments of mathematical analysis are still sadly inadequate to the load of practical decision which we would gladly place upon them.

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International Trade Statistics. Edited by R. G. D. ALLEN and J. EDWARD ELY. (London: Chapman and Hall, 1953. Pp. xii + 448. 54*s*.)

THIS book on the whole admirably fulfils its purpose as a guide to the current flow of international trade statistics. The editors have successfully enlisted the collaboration of specialists, almost all government or international organisation officials, in the fields covered so that the discussion of the range and quality of the available information and of the problems and pitfalls encountered in its use is on a consistently high level.

Part I describes the essential characteristics of the data, their compilation and coverage, commodity and country methods of classification, valuation and the question of exchange conversion. Part II, the most analytical section of the book, deals with the derived uses of international trade statistics. Dr. Gardner, the head of the International Monetary Fund, Balance of Payments Division, discusses the balance-of-payments aspect of merchandise trade statistics from the point of view made familiar in that organisation's *Balance of Payments Manual* and *Balance of Payments Yearbooks*, and in the last section of his chapter calls attention to the compensatory financing form used by the Fund in analysing foreign-exchange problems. The opinion may be ventured that the last word has not yet been said on the value of the dichotomy between autonomous and compensatory international economic transactions. Students will find Professor R. G. D. Allen's lucid chapter on " Index Numbers of Volume and Price " particularly helpful, covering as it does the basic problems of constructing indices of price, quantity and the terms of trade. There is a salutary warning on the limitations of long-term and secular terms of trade, which is all the more necessary in view of the fact that there have been a number of prominent sinners in this respect. Mr. Jones' chapter on " Exports and Imports in the Domestic Setting " is admittedly and inevitably compressed,

which presumably explains the omission of any reference to the possibilities of the application of input–output analysis to international trade, a sphere already enriched by Professor Leontief. Perhaps Part II would have gained pedagogically by the inclusion of a separate chapter on some of the more advanced applications of international trade statistics covering not only the input–output approach but also the vexed problem of the measurement of elasticities in international trade. Chapter 12, on "International Comparisons and Standardisation," deals with the progress made in establishing comparability between the returns of different countries and, together with the detailed studies in Part I and III, furnishes a convincing refutation of the more serious allegations in Dr. Morgenstern's brochure on *The Accuracy of Economic Observations*, at any rate as far as the recent statistics of the more developed countries are concerned.

Part III reviews the specific statistics of the two leading trading countries, the United States and the United Kingdom, and of the members of the chief trading groups, with the exception of the Soviet bloc. Apparently the chapter on the United Kingdom was written too early to include a section on the reconciliation of the Board of Trade export and import figures with those of the *Balance of Payments White Papers*. The treatment of oil exports by Middle Eastern countries, while anomalous in terms of current international practice, has a certain internal logic fully conforming with the *ideal* definition of export values advanced on p. 84. It is interesting to note the tendency in colonial and dependent areas to understate the value of exports.

All in all, the editors are to be congratulated on this thoroughly competent and convenient compendium as useful alike to the business-man and general reader as to the student.

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Social Accounts of Local Authorities. By J. E. G. UTTING. National Institute of Economic and Social Research, Occasional Paper No. XVI. (London : Cambridge University Press, 1953. Pp. v + 89. 16*s*.)

THERE can be few people who would deny that the British fiscal system has received less attention from economists during recent years than it deserves. This is doubly true of local government finance, a circumstance which makes Mr. Utting's work a welcome addition to this series of Occasional Papers.

It should be made clear at the outset that Mr. Utting did not intend to write specifically about local government finance. His book can justly be described as an exercise in statistical sampling. Thus, whilst the serious student of British local authority finance cannot ignore Mr. Utting's findings, statisticians will also find them valuable.

Mr. Utting's inquiry had two aims. First, he wished to obtain information about the financial transactions of local authorities from which he could construct a system of social accounts. Second, he wished to provide information about the sampling of sets of accounts which might prove relevant in collecting social accounting information from other sectors of the economy.

The book falls into three main parts. Mr. Utting first explains the nature of the information he sought from local authorities and how it was collected. Second, he discusses the way in which the sample of local authorities was chosen. This task was certainly not lightened by the fact that only some 50% of the authorities approached were willing and able to complete the necessary form. Three surveys were made, for the years 1946–47, 1947–48 and 1948–49, and the author explains how, and why, the " victims " varied.

The third part of the paper sets out the estimated social accounts and explains how they were drawn up. This, naturally, represents the kernel of the report. Besides presenting the estimates, the author considers which measures of size could have been used in this inquiry and shows why, except when considering county councils, retained rate income seemed most appropriate. The discovery of this exception represents the kind of by-product from this inquiry which will interest students of public finance. It was found that county councils appear to fall into two fairly sharply-divided groups, in one of which the ratio of grants to rate income is markedly higher than in the other. This distinction appears to stem from differences in the " block grant," with the dividing line where block grants are roughly 2*s.* 6*d.* in the pound.

The author also considers the reliability of his estimates by comparing them with figures obtained from complete information and published in *Local Government Financial Statistics*. It is clear that, in general, the estimates proved to be extremely accurate, except for those in the capital accounts. Mr. Utting has displayed a willingness for self-criticism by no means always found among social scientists, in attempting to discover reasons for these discrepancies. He finds the answer partly in a mis-

understanding by local authorities of the way in which they were intended to set out some of the information relating to housing, and partly in problems arising from war damage.

Mr. Utting's paper is a competent document, giving a workmanlike description of his methods of inquiry and his results. He has done a useful job well. One minor criticism is that in the introductory chapter Mr. Utting apologises rather too profusely for the shortcomings of his inquiry. Most readers will prefer to decide for themselves what these failings are, and, in particular, will not wish to be given notice of them in advance. In any case, are these apologies really necessary? Anyone who has carried out empirical research of this kind will surely feel that to persuade 50% of a selection of hard-worked local authorities to fill in a lengthy questionnaire is in itself no mean feat.

The ordinary economist cannot help feeling that social accounting has become something of a "fetish" during recent years. Mr. Utting's real achievement is surely to have shown how figures for a whole sector of the economy can be obtained on a sampling basis, rather than to have put his results into the particular form required of a set of social accounts. One doubt therefore remains. Is it possible that in concentrating his attention on producing the social accounts, Mr. Utting has ignored other useful information about local authority economics which his raw data might have yielded? This is not an accusation, only a question. Mr. Utting alone can know the answer.

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Business Finance. By F. W. PAISH. (London: Pitman, 1953. Pp. viii + 144. 12*s.* 6*d.*)

PROFESSOR PAISH defines finance as "the provision of money when wanted," and in this book he discusses the principles and practice by which businesses provide themselves with the money needed for their activities. The book is based on lectures delivered to economics students of the University of London, and its approach to the subjects dealt with is thus rather from the economic than the legal or accountancy standpoints. It is written against what the author calls the "sombre background" of the present state of Britain, in which there is not enough personal saving, not enough industrial capital and far too much taxation.

As always, Professor Paish expresses himself with admirable lucidity and directness. He writes with an intimate practical,

as well as theoretical, knowledge of his subject, and his book should be invaluable not only to students of economics but also to budding bankers and stockbrokers and accountants, and indeed to any young man or woman intending to make a career in the City or in business administration. I wish it had been available years ago when I first went into the City! It would have greatly eased a laborious process of generalisation from experience.

The book is divided into two parts, the first being broadly concerned with principles and the second with practical issues. In the first part Professor Paish considers such questions as the "risks" of finance, finance by borrowing and the issue of shares, and the various types of limited-liability company. The second part deals with the practical financial problems involved in running a business concern, such as the proper provision for the depreciation of assets, the effect of changes in prices levels on profits, the taxation of profits and the raising of capital through the new-issue market.

The kernel of the book is Chapter V, the first of the second part, which is entitled Internal Finance (*i.e.*, the internal finance of a company as distinct from its "external finance" by raising capital in the market) and analyses the problems of valuation, depreciation and taxation with which an ordinary small business has to cope in Britain to-day. In this chapter the author deals particularly with the effects of a changing price level on profits. He shows very clearly how under the conventional systems of calculating profits the capital of a business can (even without the helping hand of a fiscal system based on the fiction of stable money) be eaten away in a period when prices of materials and replacement costs of fixed assets are rising—eaten away quite possibly without those in charge being aware of the fact.

I must say, however, that here Professor Paish for once, and most uncharacteristically, seems to me to pull a punch. He says that "a satisfactory definition of profits should offset changes in the purchasing power of money in general, but not changes in the replacement cost of particular assets." As he is talking economics and not politics, the only satisfactory definition of profits would, in my view, be one which allowed for the ultimate replacement at current prices of the actual assets employed by the business. I agree that in practice such a calculation would not be feasible for each individual business and that it would be necessary to use a price index. But the type of index suggested by Professor Paish, namely, a cost-of-living index, would seem to be very ill-adapted to the purpose.

He suggests that it can be assumed that if the replacement cost of a company's assets has risen more than the cost of living, its profits will also have risen more than the cost of living, so that the shareholders will have experienced some increase in real income. Therefore, he says, the excess of the rise of replacement costs over the rise in the cost of living can reasonably be regarded as a genuine profit ploughed back, and so justifiably subject to taxation. This savours of special pleading of the kind which the politicians are so well able to think up for themselves that it is better not put in their mouths by economists.

O. R. HOBSON

London.

Profit Measurement and Price Changes. By K. LACEY. (London : Pitman, 1953. Pp. v + 129. 20*s*.)

FROM time to time in the course of history the current economic " crisis " takes the form of a sharp variation in the general level of prices. At such times special gains or losses accrue to individuals, where, for institutional reasons, there is delay in renegotiating contracts in terms more appropriate to the new price levels. This situation gives rise to three kinds of economic writing : special pleading on behalf of groups who believe themselves especially to have suffered, the fruitless pursuit of the notion of a unit of account which is at the same time a measure of " true " value and more objective analysis of the probable effects upon economic behaviour of the breakdown in the traditional standard of value, money.

Mr. Lacey's book contains elements of all three, but with a single underlying, unifying theme. The whole of the argument turns, in fact, upon the author's belief that the *method* by which accounts are traditionally prepared will lead business-men to *behave* in a manner different from that which they would consider prudent if they were truly aware of the underlying economic realities. In particular, two main shortcomings of conventional accounting procedure are considered.

First, the point is made that, in times of rising prices (because of stock appreciation) a proportion of declared profits will not be in liquid form, and hence will not be available for dividends unless it is convenient to borrow or to reduce stock or cash in hand. So much is, of course, familiar, but Mr. Lacey goes further and argues that, since it is not usual to make any special provision in final accounts for the element of stock appre-

ciation, management will be misled into supposing their position to be more liquid than it is in fact. Accordingly, dividends will be higher in a boom and, by the reverse argument, lower in a slump, than they might otherwise be.

It ought perhaps to be conceded that a greater degree of plausibility seems to attach itself to the argument above if we substitute (as Mr. Lacey would wish) the expressions "real profits" and "paper profits" for "liquid profits" and "illiquid profits" wherever they occur. It may well be that names are important after all. Unfortunately suitable statistics against which the theory might be tested are not readily available. The figures quoted by Mr. Lacey are thin and scarcely convincing. Moreover, Recommendation XII of the Council of the Institute of Chartered Accountants, reprinted as an Appendix to the book, would seem to provide evidence that accountants, at least, are unlikely to be deceived.

Nevertheless, due weight must be given to Mr. Lacey's personal convictions, particularly in view of his close connection with the business world. In any event, nothing but good could come from the adoption of his proposal to create stock and asset replacement reserves rationally calculated. Any additional information likely to help the market to put a proper valuation on shares must be unreservedly welcomed.

The second main point concerns cost-accounting conventions. The first-in-first-out method of charging out materials will lead, it is alleged, to an understatement of "true" cost in times of inflation, and hence to prices being fixed too low. Such a view rests upon two assumptions. First, it supposes that prices are fixed according to cost and not on the principle of "what the market will bear." Secondly, it implies that the *estimates*, used as a guide to the price fixer, are prepared on the basis of book cost of materials rather than replacement cost, simply because the *cost accounts* themselves are so written up. The present reviewer's experience suggests that any accountant who made this last mistake would not long survive as such.

The element of special pleading in the book centres around an appeal for revision of the basis of schedule D taxation on the grounds of injustice. At times Mr. Lacey appears to be holding that the present basis is "unjust," not because businesses are overtaxed, but because there is something ethically wrong with taxing profits that are not "real." The concept of "real" profit is, in fact, pursued by Mr. Lacey with an enthusiasm matched only by that of Lowndes and Locke in their debate over

the true meaning of the pound sterling. At other times, over-taxation in the ordinary sense is implied, in spite of an acknowledgment that, during an inflation, those holding fixed-interest-bearing bonds suffer more than holders of tangible assets. To be fair, however, it must be admitted that, with a happy disregard of the secular trend, Mr. Lacey does envisage justice being done when in the fullness of time prices begin to fall. Moreover, at least one passage implies that he would like to see the compensation principle applied to all who have suffered, a suggestion which comes perilously near to repeating a recently made proposal that all prices should be tied to a cost-of-living index.

On the whole, however, there is a good deal that is valuable in this book. It is important that the issues raised should be properly understood and Mr. Lacey, although inclined to be a little too repetitive, at all times makes his points with great clarity. It should be said also that, despite criticism above of the author's occasional lack of objectivity and use of emotive words, the general standard of the book in this respect is higher than much of the current writing on this subject.

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The Local Government Service. By J. H. Warren. (London : Allen & Unwin, 1952. Pp. xiv + 222. 18*s.*)

The Finance of Local Government. By J. M. Drummond. (London : Allen & Unwin, 1952. Pp. vii + 206. 20*s.*)

These two volumes are part of a series (*The New Town and County Hall Series*) which is edited by Mr. Warren and which, while still being intended mainly for the general reader, supplements such very general reviews of the local-government system as that which Mr. Warren has himself already contributed as the first volume of the series. They thus require a somewhat specialist interest from their " general reader," although he need not necessarily be in any sense an expert in local-government affairs.

Mr. Warren's book on the local-government service will, for instance, have a special interest not only for those who are specially concerned with the conditions of service, negotiating machinery, and prospects for local-government officers, but also for those whose concern is rather with the operation of Whitleyism within a particular " industry." It is Whitleyism which has been " the main agency shaping the local-government service of to-day and to-morrow," and which has in fact made a national

service out of an employment which was formerly operated quite independently by a multitude of largely independent employers. A description of how this came about, first through the establishment of the National Association of Local Government Officers by the efforts of the employees themselves, and then by the development of Whitley machinery and principles, forms the central core of Mr. Warren's book, and is in many ways its most interesting topic.

The first part of the volume gives a brief general survey of local-government structure and functions—necessary if the book is to stand on its own, but efficiently summarised so as not to weary those to whom it is already familiar—and this is followed by a description of the various classes of local-government officer and their duties. This serves largely as an introduction to what follows, but seems rather unnecessarily detailed for that purpose and for the truly general reader. It is, however, obviously of very real value to some of the special classes of reader mentioned in the author's preface (local councillors, for instance) and this must be the justification for the detail.

Then comes what I have called the central core, although it occupies a good deal more than the central part of the three into which the author has divided his book. It starts with Chapter III on " Development as a Service " and continues through the next two chapters, on conditions and constitutional status, into Part II, which describes the employers' and employees' organisations and the machinery which has been set up for negotiation. Here again the detail is quite considerable, but it achieves quite a different object. The consideration of the development and operation of the negotiating machinery in this particular " industry " has, for me at least, done much to put the flesh on to the all too dry, bare bones of the *Industrial Relations Handbook*.

Finally, the third part discusses qualifications and training. It has an obvious value for those who are considering a career in the service or who, having got into it by chance—as many young men and women do—are wondering where it all leads to.

Mr. Drummond's book on local finance is likely to appeal to a rather different type of reader. Although the author again disclaims any intention of writing for the practitioner or specialist, and addresses himself to the lay-reader, he nevertheless assumes a fairly wide knowledge of local-government services and functions. His book deals with the broad facts of local-government finance. It does not attempt to answer many interesting questions of detail—the rules relating to local-authority liability for income

tax, for instance—and it contains only passing reference to matters of conjecture or controversy.

Two of the most important of these latter questions are those of the incidence of local rates and the possibility of finding new sources of local revenue. Mr. Drummond does just touch on the difficulties of determining the true incidence of rates (whether borne by landlord or tenant, by shopkeeper or customer), but, wisely in a book such as this, he does not attempt to reach any conclusions. It is, however, rather a pity that he has not included any bibliography or other references which would help his readers to follow up questions such as this.

Similarly, on the problem of new sources of revenue, there are brief references to suggestions which have been made by others, but the author concludes—probably quite rightly—that little relief for the rates is to be obtained in these ways. The possibility of abolishing the 75% derating of industrial premises is mentioned in the chapter on rating and valuation, but of course the desirability of this—and indeed the desirability of any relief at all from the " burden " of local rates—is too closely bound up with the question of incidence to be dealt with as a separate issue.

This is, in brief, a book for those who want a fairly detailed account of the machinery of local-government finance. It provides the essential basis of fact which is needed for a proper consideration of the soundness and efficiency of local finance; but it does not, in itself, justify the author in his belief that these have been established. This is altogether too general a conclusion to be derived from an account which is deliberately rather narrow in scope. We may undoubtedly conclude that local finance is honestly and scrupulously administered, " with numerous safeguards in the interest of ratepayers "; but soundness and efficiency are more than this.

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The Mint. By SIR JOHN CRAIG. (London : Cambridge University Press, 1953. Pp. vii + 450. 70*s*.)

The Bank of England Note. By A. D. MACKENZIE. (London : Cambridge University Press, 1953. Pp. v + 163. 15*s*.)

The former Deputy Master and Comptroller of the Royal Mint has written an authoritative history of the Mint from its earliest days to the present. This is essentially the story of an

institution—its organisation and its personalities—with an outline of the technical history of coinage. Based largely on the Mint's own records, it will be an unimpeachable reference work for economic historians, supplementing Oman's classic *Coinage of England*.

At more than one point it becomes apparent that eighteenth-century deficiences in the supply of coinage were difficulties of distribution rather than of the process of coinage itself. The Mint's failure in the supply of copper coinage—the failure that provoked the widespread use of private copper tokens—was due at any rate in part to the refusal of the banks to handle copper coins at all, while the Mint itself had no system of distribution. Burke's proposal to transfer the Mint to the Bank of England, a proposal intended to relieve the administrative chaos, would, of course, not directly have helped the distribution of coinage, though a more obliging attitude in the banks might have been more quickly induced.

Such sidelights on problems of economic history are, however, exceptional in this book, the main interest of which is in the organisation of an institution. The publisher's claim on the jacket, that the reader " may watch the development of monetary theory," has no shred of justification, and is a little surprising coming from the Cambridge University Press.

Mr. A. D. Mackenzie has written *The Bank of England Note: a history of its printing*, at the request of the Bank of England. He has based it largely on the Bank's records and those at St. Luke's Printing Works (an integral part of the Bank), but has also exerted himself fruitfully in institutional libraries and museums. Its chief interest to economic historians is the light it throws on the efforts of the Bank to produce an " inimitable note " in the Ricardian period, when these efforts had an important bearing on the choice between a gold circulation and a paper circulation. The upshot of Mr. Mackenzie's researches is on the whole a vindication of the Bank—allegations that it was not really trying to solve the forgeries problem could not have been maintained by those with inside knowledge.

The book is elegantly produced, with a wide selection of illustrations. Mr. Mackenzie has written it attractively without lapsing into the anecdotal, and produced a notably thorough piece of work. The book is as authoritative as a book sponsored by the Bank ought to be.

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Wirtschaftstheorie und Wirtschaftspolitik. Festschrift für Alfred Amonn zum 70 Geburtstag. Edited by V. F. WAGNER and F. MARBACH. (Bern: Francke, 1953. Pp. 371. Sw. Fr. 47.)

THE element of unity in a *Festschrift* is generally the work of an honoured teacher whose pupils and associates have sought to build on his theories and to prove its application. Professor Amonn's great interest in methodology is certainly well to the fore in this book, but it does not dominate. In fact, it is almost overshadowed by the discussion on modern macro-economics by younger Swiss economists who do not attempt to delineate a native tradition in this fashionable subject.

Professor Amonn's earlier work was concerned with the attempt to reconcile the conflicting views of the Menger–Schmoller *Methodenstreit*. Indeed, it is interesting to discover in the first essay by Zwiedeneck-Sudenhorst how far some of the adherents of the Vienna School went in their criticism of value theory and in the suggestions for its improvements. This writer does not recall at any length his own earlier work on the factors of inertia in price formation which influenced later Continental writers such as Stackelberg. Despite his own reservations on the static nature of value theory, Hans Mayer is anxious to preserve it from the predacity of Paretian indifference curve analysis. His study might have commanded more attention if it had concerned itself with the careful formulations of more recent years in the work of Hicks, Samuelson and Little, and had treated some of the earlier opponents of the older formulation with something better than contempt.

While in Germany feeling is apt to run high in any discussion of Keynes, evidently in Switzerland this is not so (with a few notable exceptions). One of the better-known Swiss text-books by one of the contributors to this volume, Eugen Böhler, provides a good example of the attempt to wed elementary macro-economic theory with sector analysis. Thus Professor Wagner's strictures on the treatment of the general price level in Keynesian literature are cogently stated, and Dr. Bieri shows his grasp of the post-Keynes discussion. Dr. Bohi's sequence analysis covers the familiar territory of Machlup and Metzler. It suggests that it is time that some practitioner produced a complete set of models to cover all values of the multiplier and acceleration coefficients after the fashion of the Admiralty tide tables. Finally, mention must be made of Professor Haberler's lucid exposition of the present

state of the literature on the business cycle. The final section, which pleads for a reconsideration of the role of relative prices in the cyclical process, deserves a wider audience. It is to be hoped that we shall see an extended version of it sometime soon.

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The World Social Situation. Preliminary Report by the United Nations Department of Social Affairs. (New York: United Nations, 1952. Pp. 180. 12*s.* 6*d.*)

KNOWLEDGE of the facts about social conditions throughout the world is a necessary basis for planning international policies to achieve social progress. For many economically less-developed countries the information available is meagre, and frequent use is made in this report of approximations and fragmentary data. Yet its authors have succeeded in sketching the main lines of a picture which is indeed gloomy but includes some relieving light.

More than one-half of the world's 2,400 million people live in conditions which deny them reasonable freedom from preventable disease, a diet adequate for physical well-being, a dwelling that meets basic human needs, an education necessary for progress, decent standards of working conditions and efficient methods of production. Low standards of production and labour are largely a consequence of ill-health and ignorance, and together they form a vicious circle which is difficult to break.

In recent years death-rates have noticeably declined all over the world, partly as a result of an uninterrupted fall in infant mortality in almost all countries. The war against disease combined with maintenance of high birth-rates in heavily populated countries is resulting in accelerated growth of population, which in the last fifteen years has increased more rapidly than food production. These trends seem likely to continue for several decades at least, and may involve lower standards of nutrition for many millions of people, especially in parts of Southern and South-eastern Asia.

The report deals in turn with health, food and nutrition, housing, education, conditions of work and employment, general levels of income and welfare, and there are chapters on living conditions in Latin America, the Middle East, and South and South-east Asia, where more than one-half of the world's serious poverty exists. The emphasis throughout is on standards of living in the less-developed countries; attention is concentrated

on actual conditions, and only incidental references are made to governmental and other remedial measures, these being reserved for another report.

A few of the most significant facts may be mentioned. The expectation of life at birth is thirty years for two-thirds of the world's population, but in the most-developed areas with one-fifth of that population it is sixty-three years. Control over some diseases, for example, malaria and venereal disease, can be effected rapidly at relatively low cost, but for others large capital expenditure on good water supply, sanitary systems and hospitals will be necessary. There is need for twice the 900,000 doctors of the world, especially for the rural areas of under-developed countries.

Approximately one-half of the world's population has insufficient food for physical fitness, the deficiency in " protective " foods being particularly great. In India the protein intake is one of the lowest in the world. About one-quarter of the world's population is inadequately housed; in most cities of Africa and Asia a typical working-class family lives in one room with no private cooking, bathing or toilet facilities, while in rural areas housing is generally inadequate in size, quality, sanitation and water supply. Literacy ranges from 95% or more in most European countries to 20% or less in India and other Asian countries, and in many parts of Africa. In some countries the need for trained professional, technical and administrative personnel is so great that higher education may have to be given priority over compulsory primary education.

In under-developed countries agriculture is the occupation of a great majority of the people, who suffer from low incomes, inefficient methods, seasonal under-employment and often heavy indebtedness to money-lenders. Many people " live in debt, die in debt, and their children inherit their debt " (p. 174). Industrial work is mainly done by handicraft methods in the home and in small workshops, there being, for example, 10 million handicraft workers in China to 1 million workers in factories. In 1950 the United States was the only country with a *per capita* annual income of more than $1,000, while in India, Pakistan and China, and other countries of Asia and parts of Africa, it was below $100. About half the world's population in Asia produced only 10% of the world's income, while 7% of the world's population in the United States and Canada produced almost 43% of its income. To summarise, low-income countries tend to have high crude death-rates, high infant mortality, high birth-rates, high levels of infectious diseases, serious shortages

of doctors and nurses, low calorie and protein consumption, low literacy rates and a low amount of mechanical power per head.

The report indicates effectively the magnitude of the problems to be faced in the war against disease, ignorance and want.

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The Canadian Grain Trade 1931–1951. By D. A. MACGIBBON. (Toronto: University of Toronto Press (London: Geoffrey Cumberlege), 1952. Pp. ix + 227. 36*s*.)

THIS book is the sequel to Professor MacGibbon's *The Canadian Grain Trade*, published in 1932. It deals with the plight of the wheat-growing areas of Western Canada in the 1930s, the establishment of the Canadian Wheat Board in 1935, the difficulties arising from the Second World War, the Wheat Agreement with Britain signed in 1946 and the International Wheat Agreements of 1933 and 1949; in addition, there are chapters dealing with the wheat pools, the grain exchanges and the co-operative United Grain Growers, Ltd.

The great merit of the book is that it is a demonstration, written, so to speak, "from the inside"—Professor MacGibbon was a member of the Board of Grain Commissioners for Canada from 1929 to 1949—of the consequences of governmental assistance for the internal organisation of a trade, and of the extreme difficulty of maintaining a policy of *limited* intervention. In the case of the Canadian wheat growers this problem first appeared as a result of the 1933 Wheat Agreement, under which Canada undertook to restrict exports; by 1934 it was becoming apparent "that governmental intervention in wheat with a view to protecting the living standards of the wheat producer was leading to government control of wheat production. This was something that the Western producer hated to contemplate" (p. 32). Within a year, however, the problems raised by low prices and enormous stocks led to the introduction of a bill seeking to establish a Wheat Board with the monopoly of handling and selling the entire wheat crop of Canada. This bill met with a hostile reception and was passed into law in a much emasculated form. Yet by 1943 the Wheat Board had come to have sole responsibility for disposing of Canada's wheat crop; in 1946 one of the advantages to the Canadian Government of the British Wheat Agreement was that it enabled it to postpone making a final decision about whether the Wheat Board was to remain the sole agency for marketing Canadian wheat; and up to the summer of 1953 the Board retained its powers on the plea that they were necessary

to Canadian participation in the 1949 International Wheat Agreement. Professor MacGibbon's study, in short, illustrates the mutual interaction between national and international economic planning, and shows how political influences work upon both. And it also underlines the troubled nature of these two decades. From the point of view of the Western Canadian wheat growers peace and peace again had its troubles no less than war. War, depression, long-term changes and renewed war disrupted and distorted development scarcely less on the Canadian prairies than in the British Isles.

The book is, as its title proclaims, a history of trade, and not a complete study of the grain economy, nor a complete study of the economic and political factors involved in the increase of government activity in this instance, nor a complete study of the economics of international agreements. There are loose ends concerning both production on the one hand and politics on the other, but enough is said about each to reveal the nature and extent of the difficulties they are likely to raise for planners. But on one point Professor MacGibbon might have given more information. In a defence of the British Wheat Agreement in 1951 Mr. Howe remarked: "The time when you must decide whether an agreement is good or bad is when you sign on the dotted line, and we signed on that dotted line in 1946" (p. 144). But what were Canadian expectations in 1946? On p. 121 we are told that a contract "on the basis of a price that was so much below current wheat values" caused "distinct surprise"; but we have just learned (p. 120) that growers "were becoming increasingly alarmed about the future stability of world prices." In 1947, when the Agreement was continued at a raised price, producers' expectations were more favourable; but in the event the British again did well out of it, and the total "loss" to Canadian farmers was estimated (not by Professor MacGibbon) on the basis of staggeringly jejune calculations, at from $166 million to $330 million or more. But the actual figures are much less interesting than the conditions which made such an agreement possible, and here we could do with more information.

All in all, however, this is an admirable book, required reading for those who see an easy, quick or entirely satisfactory solution to primary producers' problems in government intervention and international agreement.

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Attempts at General Union: A Study in British Trade Union History, 1818–1834. By G. D. H. COLE. (London: Macmillan, 1953. Pp. viii + 218. 16*s*.)

THIS small book is a revised and enlarged version of a study which first appeared in 1939, in the *International Review for Social History*, the journal of the International Institute for Social History, at Amsterdam. Nearly a quarter of the book is taken up with appendices of documents, which are already proving useful to students; they would be even more useful if the reader could be sure that the documents have been accurately transcribed. Professor Cole's copy of the Constitution of the Grand National Consolidated Trades Union (Appendix 7) differs at several points from that given by Sidney and Beatrice Webb as an appendix to their *History of Trade Unionism*; yet both copies seem to have been taken from the same document in the Goldsmiths' Library.

Professor Cole has not attempted to give a complete history of trades unionism between 1818 and 1834; his main purpose has been to supplement and clarify the narratives of earlier historians. The first ten years of the period are disposed of in ten pages; even for the crucial years 1829–34 there are gaps in the narrative which may be disconcerting to the reader. He is expected to have read not only the Webbs and the Hammonds but also Warburton, Postgate, Fynes and Ness Edwards, as well as Podmore, Holyoake, Benjamin Jones and the T.U.C.'s memorial volume on *The Martyrs of Tolpuddle*. If he has read all these, he will have a confused impression of the labour movements that were rising and falling in the early eighteen-thirties. It is this confusion that Professor Cole has tried to dispel; but it may be doubted whether he has succeeded. On many points he has used much new and detailed information; but the piling up of details does not in itself clarify a confused story. In Chapter VI of the book, a long and involved account is given of the Yorkshire Trades' Union, sometimes called the Leeds Union, sometimes the Leeds Combination, sometimes the Leeds Trades' Union; apparently the Clothiers' Union, sometimes called the Leeds Clothiers' Union, was a part of the wider Trades' Union. The Worsted Operatives' Union (p. 63) is described as the Worsted Section of the Leeds Union (p. 64); it is also described (p. 66) as the Bradford section of the Trades Union, and may even have been the "Bradford Order of Weavers" (p. 69), which was apparently identical with the Stuff and Worsted Union. There was also a Wool-

combers' Union, which is said to have been a section of the Worsted and Stuff Operatives' Union (p. 72). Later reference is made to "a Society of Woolcombers, who may have been part of the Stuff and Worsted Operatives' Union, which was in turn a constituent of the 'Yorkshire Trades' Union'" (p. 74); only one page later the Woolcombers are described as the leading members of the "Bradford Stuff and Worsted Union" (p. 75). Professor Cole has laboured hard over the complicated details of these little-known labour movements in Yorkshire; but his account remains confusing, if not confused.

The "Attempts at General Union" began to come to a head with the establishment of the Grand National Consolidated Trades Union in 1834; or was it in 1833? Mr. and Mrs. Webb were quite sure that the G.N.C.T.U. was founded in 1834; Professor Cole, in *The Common People* and *A Century of Co-operation*, has no less confidently asserted that it was founded in 1833. The date 1833 is maintained on the dust cover and the first page of the present volume; yet by Chapter XV Professor Cole seems to be in agreement with the Webbs, that the Union was founded in 1834, after all. Even so, it is not easy to accept his conclusion that the Constitution of the G.N.C.T.U. was adopted in February 1834. The Resolutions of February 1834 name the *Pioneer* as the official organ of the Executive Council, whereas the Constitution declares that the *G.N.C.T.U. Gazette* shall be "considered the official organ of the Executive Council, and the general medium of intelligence on the affairs of the Union." But it was not until June that Morrison's *Pioneer* was replaced (pp. 145–6) by the *Official Gazette of the Grand National Consolidated Trades Union*.

Professor Cole is well aware that his essay has not cleared up all the difficulties of the story; he appeals for further information from northern students who have access to local collections of materials and the files of local newspapers. In spite of its shortcomings, his book is a useful addition to our knowledge of a peculiarly tangled subject. It would be going rather too far to say that he has blazed the trail; but he has hacked manfully at the jungle, and has let daylight into many dark places.

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Enterprise and Secular Change: Readings in Economic History. Edited by F. C. LANE and J. C. RIEMERSMA. (London: Allen & Unwin, 1953. Pp. v + 556. 32*s*.)

THE editors of this useful collection of articles and papers have set out to show how economic historians have studied a great diversity of problems, to illustrate their employment of different kinds of historical sources and to demonstrate a number of the more important concepts and methods they have evolved. The book is divided into three sections—the first concerned with the changing organisation of business and the role of the entrepreneur; the second, with the history of money and prices; and the third, with the tasks and methods of economic history as an independent discipline.

Many of the articles collected in these pages will be familiar to economic historians, although some of the controversies covered in the last section have produced only the faintest ripples in English academic circles. Few economic historians have claimed that economic history should compete with economics: few have succumbed to the German urge to schedule stages in economic development. Even the recent impact of theoretical economics —not so much Professor Heckscher's "pure theory" as Keynesian theory—has not profoundly changed the attitudes of English economic historians to their tasks. They have continued to tackle specific problems which interested them rather than to try to systematise the whole development of economic organisation: the questions they have asked, at least in recent years, have been Sir John Clapham's famous questions—"how large? how long? how often? how representative?" Never lacking in curiosity and seldom in a distinctive brand of whimsicality, they have also agreed with Clapham that "it is at the over-lapping margins of disciplines and sciences that the most important discoveries are usually made." The rather strained attempts by some of the writers in this volume carefully to circumscribe the boundaries of economic history are not congenial, one feels, either to the present or to the past generations of English economic historians. If they do not like social history with the politics left out, nor do they like economic history with the social history left out. They have only a limited interest in battles of definitions.

By far the most powerful essay in the last section of this book is Marc Bloch's "Towards a Comparative History of European Societies," although Simiand's essay on "Causal Interpretation and Historical Research"—based on two papers written in 1903

and 1906—raises many questions which Clapham never asked. A newly-translated article by Professor Arthur Spiethoff represents the latest (1948–52) refinement of the work of the school of German "historical economists." Significantly almost all its footnotes refer to German sources, although Walter Lippman receives a mention in the text. Spiethoff replaces Sombart's "economic systems" with "economic styles" (patterns of economic life) and draws careful methodological distinctions between pure economic theory, economic Gestalt theory and economic history. His essay, culled from two of his writings, deserves attentive study, and can be profitably compared not only with the English but also with the French approach to the subject.

More interesting perhaps than the section on method is the first section of the book on business units. Two interesting articles by Professors Luzzato and Sapori—shorn, alas, of their footnotes—qualify Sombart's thesis—also printed without footnotes—that in the Middle Ages there existed only a host of small, usually uneducated, business-men who possessed the mentality of artisans and confined themselves to activities affording them no more than a modest livelihood. The translation, as of Sombart, is a little stilted, although well worth doing. Professor de Roover follows up with a synthesising article on "the commercial revolution" of the thirteenth century, and Professor Lane with his scholarly study of family partnerships and joint ventures in the Venetian Republic. Then comes a wide gap, one of the few gaps in the book, and the reader passes direct to the Handlins' study of the origins of the American business corporation. It is a long way from Venice to Salem, and much entrepreneurial history is left out at this point. Later articles by Gardiner Means on the growth of the huge corporation in the United States and by Professor Jenks on American railroads are already deservedly well known and frequently quoted. The section concludes with an exhortatory lecture by Professor Arthur Cole, who has done much to encourage the study of business history. "To study 'the entrepreneur,'" he maintains, "is to study the central figure in modern economic history, and, to my way of thinking, the central figure in economics."

Apparently some of the writers in the second section do not agree. Professor Wesley Mitchell, whose article on the role of money in economic history—a rather disappointing article—begins the section, asks whether economic history cannot "be organized most effectively around the evolution of pecuniary

institutions." After reading some of the essays in the second section, one hopes not. The most useful is Professor Nef's article on prices and industrial capitalism in France and England: Professor Earl Hamilton's study of profit inflation and the industrial revolution seems to call for a contribution from Professor Ashton.

The editors of this book of readings are to be congratulated on putting together such a well-chosen selection of readings. Sponsored by the American Economic Association and the Economic History Association, the book should succeed in its main purpose of helping economists, sociologists and general historians to acquaint themselves with some of the problems and achievements of economic history. It should also, as they say, provide young scholars starting on their own investigations in economic history with a collection of material in which they can find together some of the aims, methods and results of other investigators. There is need for interchange of ideas of this sort. As Marc Bloch remarks in the conclusion of his paper, " a dialogue between deaf people, each of whom answers with complete disregard for the other's questions, may be a standard device of comedy and draw laughter from a susceptible public, but it hardly deserves recommendation as an intellectual activity."

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NOTES AND MEMORANDA

Physical Productivity in Canada, 1935–52

Productivity study has been turned recently in the direction of Canada, and Canadian experience has been given universal importance by Mr. Maddison's characterisation of it, "Productivity in an Expanding Economy." [1] The investigators conclude that productivity has risen in Canada at a rate of about 3% per man-hour per year in recent decades, a more rapid advance that has been enjoyed by the United States. However, the increase is held to depend heavily on structural changes, especially the shift of workers from Canadian agriculture to other industries. Mr. Maddison finds that productivity in the Canadian economy as a whole rose only 0·3% per year between 1941 and 1949, and that "productivity in manufactures grew more slowly than in the rest of the economy." [2] Mr. Sutton finds a spectacular advance in productivity during the war, but little advance after it. The gains are traced chiefly to agriculture, and Mr. Sutton presents computations to show that there was only a minute gain in the productivity of Canadian manufacturing, 1945–50.[3] This recent record is hardly auspicious, or what one might expect of an "Expanding Economy." If good crop weather and the movement of under-employed workers out of agriculture, neither of which can be depended upon indefinitely, have been the main support, and the industrial sectors show little promise, Canada's prospects of maintaining or improving her relative efficiency are far from bright.

Fortunately for Canada, productivity appears to have advanced in the industrial sectors of the Canadian economy more rapidly and regularly than Mr. Maddison and Mr. Sutton have found. This view follows from the measurement of Canadian productivity in terms of physical volume of output, by sector. This note offers reasons for considering this method of measurement preferable to

[1] A. Maddison, "Productivity in an Expanding Economy," Economic Journal, LXII, No. 247, September 1952, pp. 584–94; Maddison, "Productivity in Canada, the United Kingdom, and the United States," *Oxford Economic Papers* (New Series), IV, No. 3, October 1952, pp. 235–42; G. D. Sutton, "Productivity in Canada," *Canadian Journal of Economics and Political Science*, XIX, No. 2, May 1953, pp. 185–201; Maddison, "Productivity in Canadian Manufacturing, 1935–1948," *ibid.*, pp. 222–6.

[2] Maddison, "Productivity in an Expanding Economy," p. 586, p. 590.

[3] Sutton, *op. cit.*, Table IV, p. 189.

those so far used, and presents indexes of productivity derived by it.

The Choice of Measures of Productivity

To calculate Canadian productivity, Mr. Maddison and Mr. Sutton have depended mainly on estimates of Canada's Gross National Product, deflated to give totals of Real Product in constant dollars, and divided by employment or man-hour data to yield a productivity series. While results by this method offer a useful guide, great dependence should not be placed on them. Global estimates suffer from the fact that some of the parts of which they are made up are rough approximations. In particular, real output for most services, and for construction, is calculated in Canada in such a way that constant productivity is implicit.[1] The small increases in productivity in Canada shown for recent years may, therefore, owe more to the nature of the statistics than to actual experience. Mr. Sutton's computation of productivity in manufacturing from the net value of manufacturing output, deflated by the wholesale price index of manufactured goods,[2] is still more unsatisfactory. The wholesale price index of manufactured goods is essentially a gross concept, heavily affected as it is by changes in raw material prices. It is not, therefore, an appropriate deflator for a net value which should not be affected directly by raw material price changes. Mr. Maddison, finally, has developed measures of net physical productivity for particular Canadian manufacturing industries.[3] The difficulty with these is that they cover only a small part of Canadian manufacturing, and there is no basis for judging their representativeness. The evidence they do afford is of considerable advances in productivity in manufacturing.

The productivity series in this paper are derived by dividing indexes of the physical volume of output in particular sectors, by indexes of employment for those sectors.[4] Several advantages may be claimed for this method. In principle, a measure of the net physical volume of output is precisely what is wanted for a

[1] C. L. Barber, *The Measurement of Total Real Product in the Canadian Economy*, Ottawa, 1952 (mimeo.).

[2] Sutton, *op. cit.*, pp. 189–90.

[3] "Productivity in Canadian Manufacturing, 1935–1948" and "Productivity in Canada, the United Kingdom, and the United States."

[4] I presented indexes derived in this way in "Productivity and the Shorter Work Week," *Canadian Trades and Labor Congress Journal*, XXX, No. 8, August 1951, pp. 8–11. As the indexes of physical production used in preparing this article have since been revised, the series differ from those presented here, though the same general conclusions may be drawn.

productivity series. In practice, an index of physical production covering a significant part of the economy is weighted and adjusted by values; but the compilers of the index are working to the specific goal of a measure of physical output changes. Indexes may be selected for the sectors for which output is more measurable and most reliably measured, avoiding the unexplored territories within global series. On the other hand, much wider coverage than particular industries is possible, so that conclusions may be drawn for Manufacturing, Mining and Agriculture sectors. Finally, it is an advantage that the series of industrial physical

Indexes of Physical Productivity, Canada, 1935–52

1946 = 100

Year.	Agriculture: physical volume of output per man-year.	Mining: physical volume of output per man-year.	Manufacturing: physical volume of output per man-year.	Manufacturing: physical volume of output per man-hour.
1935	75·2	100·8	85·2	—
1936	66·2	102·1	88·3	—
1937	64·1	106·0	91·3	—
1938	81·0	109·7	86·7	—
1939	95·7	112·4	91·1	—
1940	99·3	117·4	98·9	—
1941	91·4	119·4	102·1	—
1942	147·7	120·8	101·7	—
1943	104·1	117·1	100·7	—
1944	126·5	107·6	104·9	—
1945	99·2	109·8	100·5	96·9
1946	100·0	100·0	100·0	100·0
1947	101·1	107·3	102·3	102·8
1948	106·9	112·6	103·2	104·4
1949	110·5	117·9	103·9	104·9
1950	141·2	123·4	108·2	109·2
1951	151·9	130·9	107·4	109·7
1952	180·8	133·8	107·9	111·0

Sources

AGRICULTURE—D.B.S., *Index of Farm Production, 1952* (Sub-title: "Index Numbers of the Physical Volume of Agricultural Production, Canada, 1935–1952"), Memorandum, Ottawa, May 1953. This Memorandum suggests deductions of 3 points from the 1950 index, and 3·5 points from the 1951 index, to take account of the low quality of these crops, and these deductions have been made in calculating the series above.

D.B.S., *Canadian Labour Force Estimates, 1931–1950*, Reference Paper No. 23, Ottawa, 1951, and June Surveys of the Labor Force, *Canadian Statistical Review*.

MINING AND MANUFACTURING—D.B.S., *Revised Index of Industrial Production, 1953–1951*, Reference Paper No. 34, Ottawa, 1952; D.B.S., *Employment, Payrolls and Average Weekly Earnings, 1939–1946, with Index Numbers of Employment, 1921–1938*, Ottawa, 1951. (All these indexes conform to the Canadian Standard Classification of Industries.) Series were completed from the *Canadian Statistical Review*. To compute output per man-hour, use was made of the series, "Average Hours Worked per Week in Manufacturing Industries," *Canadian Statistical Review* or Canadian *Labour Gazette*.

outputs used here have recently been revised, with great care, by the Canadian Bureau of Statistics.[1] For these reasons, the productivity indexes presented are believed to be more reliable than those that have so far appeared.

Physical Productivity in Canada

Agriculture, Manufacturing and Mining, for which indexes are shown, cover a little less than half the Canadian economy; but this is the part for which productivity measures are most reliable, and perhaps most informative. The series support the view that Agriculture has played a leading role in Canadian productivity gains. But, in contradiction to most other findings, they show creditable advances in Manufacturing, and large advances in Mining. They suggest that productivity gains have come in waves or cycles, and therefore throw doubt upon the significance of annual rates of increase calculated between years selected fortuitously.[2] They deny that productivity gains were so concentrated in war-time as Mr. Sutton believes, and they show a post-war wave of gains at variance with his findings. Some of these points may be elaborated briefly :

(1) *Agriculture.*—The spectacular, though erratic, advance of productivity in Canadian agriculture is difficult to state meaningfully in a rate of increase, and it is a complex phenomenon to interpret. At least four factors play a significant part in it : (i) potential productivity gains achieved in or before the 1930s but

[1] Dominion Bureau of Statistics, *Revised Index of Industrial Production, 1935–1951*, Reference Paper No. 34, Ottawa, 1952. The merits and limitations of the revised indexes as measures of the physical volume of output are carefully discussed, pp. 11–35. Reasons offered by the Bureau of Statistics for not itself releasing productivity figures (pp. 33–5) seem to apply to particular industry series rather than to totals.

[2] Mr. Maddison, from the limitations of his data, suffered the disadvantage in " Productivity in an Expanding Economy," of having to select bench-mark years that obscure the course of productivity changes. He found rates of increase in productivity per man-year for the whole Canadian economy of 3·8% for 1931–41 and 0·3% for 1941–49. My manufacturing series gives similar rates of 3% for 1935–41 and 0·2% for 1941–49. However, my series argue that the low rates for 1941–49 are misleading, since they compare a fairly high year in one cycle with a fairly low year in the next.

In the same way, Mr. Maddison's comparisons between Canada and the United Kingdom (" Productivity in Canada, the United Kingdom, and the United States "), using the year 1935 because British statistics are available for it, yield biased results to the considerable extent that depression and under-utilisation of plant was more severe in Canada than Britain. For the same reason, but in a lesser degree, Canada probably suffers in comparisons with the United States for pre-war years. Mr. Maddison seems to dismiss this difficulty too readily (*ibid.*, p. 236, note 2).

not realised until the war—*i.e.*, disguised unemployment; (ii) good weather as against drought in the 1930s; (iii) a substantial movement of marginal subsistence farmers—persons living on a "farm" but producing little—into industrial pursuits when industrial employment expanded;[1] (iv) "real" productivity gains—better methods and machinery. It is scarcely possible to isolate these factors. It may be some indication of the amount of disguised unemployment before the war that the agricultural labor force dropped about 13% early in the war, while the total labor force remained approximately constant. Something less than half—perhaps 35%—of the gains in productivity may be ascribed to improved weather conditions.[2] "Real" productivity gains, if important, were certainly less so than either weather or the exit of marginal farmers. The rate of increase in productivity between 1939 and 1949—just under 1½% per year compounded—would seem to be abstracted in a reasonable degree from weather fluctuations; but it must not be forgotten that a continued flow of surplus labor from agriculture depends upon continued general buoyancy.

(2) *Mining and Manufacturing.*—The productivity gains shown for these sectors are larger and more regular than other investigators have found, and they are more authentic than the gains in Agriculture in the sense that they depend little on weather and the liquidation of disguised unemployment. Over the seventeen-year period shown, the average compounded rate of productivity increase (physical output per man-year) was a little under 1½% per year in Manufacturing and a little under 1¾% in Mining. Periods of increasing economic activity show much higher rates: about 3% in Manufacturing, 1939–44; 2½% in Mining, 1935–42; and no less than 5% in Mining, 1946–52. Rates taken from peak

[1] Two losses occur in this process, which are not taken into account: (1) the subsistence farmers lose leisure and independence; (2) the economy loses resiliency—loses, that is, its handy labor reserves available in emergency. The creaking of the more rationalised British economy in recent years suggests that such labor reserves have a great, if indeterminate, value. This seems to be a valid element in the argument that a "reasonable" amount of unemployment would be a good thing. The usual formulation of that argument—that lazy workers will be terrorised into working harder—ignores the fact that wage-earners have little control over their conditions of work, and is at variance with the finding of productivity studies that high productivity goes with full employment (full utilisation of plant).

[2] This view was arrived at by computing how much productivity in the past dozen years would have exceeded productivity in the 1930s, if actual agricultural output had been produced by an agricultural labor force that remained as large a proportion of the total labor force as was the case in the 1930s. See Sutton, *op. cit.*, p. 193 and p. 200.

to peak of productivity waves would seem to be the best indicators of long-run forces, abstracted from cyclical factors. On this basis, the rate of increase for both Mining (1942–52) and Manufacturing (1945–52) is just over 1% per year. All these rates represent changes in physical output per man-year. It is possible to show a rate of increase of physical output per *man-hour* for Manufacturing, 1945–52. The rate is a little under 2% per year, which may be compared with the rate of increase per *man-year* for the same period of 1%. Hence, in this instance, productivity per man-hour rose almost twice as rapidly as productivity per man-year.[1]

(3) *Other Sectors.*—The greatest productivity problem, statistically, lies in the large part of the economy outside Agriculture, Manufacturing and Mining. It is in such areas as trade and services that productivity is hardest to measure, and Canadian real output data for these sectors make only partial allowance, or no allowance at all, for productivity changes.[2] Global estimates, therefore, to this extent substitute arbitrary assumptions for knowledge. Comparisons with other countries over the past, and extrapolations into the future, to estimate Canada's chances relative to the United States or otherwise,[3] are correspondingly speculative. Any extrapolation, also, must be precise concerning the level of economic activity envisaged; for the series presented here support the conclusion reached elsewhere that high productivity is heavily dependent upon a high level of economic activity.[4]

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[1] It is misleading to express this relationship, as is often done, by saying that half the gain in productivity was taken in leisure. Such a formulation implies that productivity gains could have been realised without shortening the hours of work, thereby ignoring the importance of a shorter work week as a stimulus to efficiency.

[2] C. L. Barber, *op. cit.*

[3] Sutton, *op. cit.*, pp. 196–201. Maddison cautions against extrapolation, "Productivity in an Expanding Economy," pp. 593–4.

[4] Maddison, "Productivity in Canadian Manufacturing, 1935–1948," p. 223; "Productivity in an Expanding Economy," pp. 591–2. I have made some unpublished inter-provincial comparisons of productivity in selected Canadian manufacturing industries, 1937–50, which indicate also that the degree of plant utilisation is of great importance.

Professor Pigou on the Efficiency of the Competitive Capital Market

1. Probably no economist would consider ideal the allocation of consumption over time by the competitive capital market. Few, indeed, would regard the competitive solution as even a sufficient approximation to the ideal. External economies and diseconomies of investment and consumption, indivisibilities, the imperfection of knowledge on the parts of savers and investors (concerning future prices and the investment plans of other individuals) may be difficult to measure, but it would be a brave soul who would deny their importance. To this catalogue of difficulties it may be added that the bulk of savings originates with corporations and that much private saving is compulsory or the result of contracts entered into years before.

It is not the purpose of the present note to attempt a sweeping refutation of current views; there is probably no sense sanctioned by current usage in which the competitive solution is optimal. Rather it is to examine two propositions, both reflecting unfavourably on the competitive outcome, which have been argued by Professor Pigou. Both propositions appear to have been generally accepted within the profession. But their radical implication does not appear to have been perceived. Both propositions imply the rejection of revealed preference as the yard-stick of economic policy. It will be argued that there has not been provided a sufficient reason for doing so.

2. The first proposition has been stated by Pigou as follows: [1]

> "... our telescopic faculty is defective, and ... we, therefore, see future pleasures, as it were, on a diminished scale." [2]
>
> "This reveals a far-reaching economic disharmony. For it implies that people distribute their resources between the present, the near future and the remote future on the basis of a wholly irrational preference." [3]
>
> "Hence the existence of preference for present over equally certain future pleasures does not imply that any economic dissatisfaction would be suffered if future pleasures were substituted at full value for present ones." [4]

The contentious part of this argument may be summarised in two statements, one ethical, the other empirical: (i) It is proper that

[1] A. C. Pigou, *The Economics of Welfare* (London, 1938), pp. 24–6; *idem*, *Socialism versus Capitalism* (London, 1937), pp. 132–3. The argument has been stated also by Dobb, *Political Economy and Capitalism* (London, 1940), pp. 308–9.

[2] Pigou, *The Economics of Welfare*, p. 25. [3] Pigou, *loc. cit.* [4] Pigou, *loc. cit.*

there should be no time preference between "equally certain" pleasures of "equal size." (ii) In fact, such preference exists.

The second proposition is based on the uncertainty of expected satisfactions:

> "Since human life is limited, such fruits of work or saving as accrue after a considerable interval are not enjoyed by the person to whose efforts they are due. This means that the satisfaction with which his desire is connected is not his own satisfaction, but the satisfaction of somebody else, possibly an immediate successor whose interests he regards as nearly equivalent to his own, possibly somebody quite remote in blood or in time, about whom he scarcely cares at all. It follows that, even though our desires for equal satisfactions *of our own* occurring at different times were equal, our desire for future satisfaction would often be less intense than for present satisfaction, because it is very likely that the future satisfaction will not be our own. This discrepancy will be more important the more distant is the time at which the source of future satisfaction is likely to come into being . . ." [1]
>
> "The practical way in which these discrepancies between desire and satisfaction work themselves out to the injury of economic welfare is by checking the creation of new capital and encouraging people to use up existing capital to such a degree that larger future advantages are sacrificed for smaller present ones." [2]

The contentious part of this argument, also, may be summarised in two statements, one ethical, the other empirical: (iii) It is proper that an individual's rate of saving should not be influenced by the possibility that he will not live to enjoy his savings. (iv) In fact, he will save less than if he were "sure" that he would live to enjoy his savings.

3. Statements (i) and (iii) are frankly persuasive or ethical. They are radical propositions, since they amount to the rejection of the currently revealed preferences of the present generation as the yard-stick of economic policy. Their persuasiveness is enhanced by supporting statements ((ii) and (iv)) which have a superficial appearance of objectivity, *i.e.*, of saying something about the real world. Upon examination, however, the objectivity ceases to be apparent and the ethical statements are left without support. Without support, they cease to be plausible.

Statement (ii) is unacceptable, not because it is demonstrably false, but because its truth or falsity cannot be ascertained, either by market observation or by controlled experiment. Whether or not individuals have a preference for present over "equally

[1] Pigou, *The Economics of Welfare*, p. 26. [2] Pigou, *ibid.*, p. 27.

certain" future pleasures cannot be determined, since future pleasures are not, and cannot be made, "equally certain" with present pleasures. In the market, individuals typically choose between uncertain pleasures. And if it cannot be determined whether or not statement (ii) is true it cannot be determined, in a specific situation, by how much saving falls short of the ideal. Pigou has failed to provide an operationally meaningful alternative to currently revealed preferences as the yard-stick of economic policy.

Similarly, statement (iv) seems to be non-testable. At any rate there has not been described a set of operations the performance of which would indicate the truth or falsity of the statement. This means that no way has been provided for discovering by how much market saving deviates from the ideal. Again there has not been provided, as the yard-stick of economic policy, an operationally meaningful alternative to currently revealed preferences. The proposal to abandon the latter, therefore, cannot be seriously considered.

4. The literature on economic policy abounds with apparently objective statements. Such statements are particularly persuasive. It behoves the careful writer to describe methods of checking their truth or falsity. That even such a writer as Professor Pigou should occasionally fall short of the ideal merely underlines the difficulty of achieving it.

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THE THEORY OF FEDERAL FINANCE[1]: A REJOINDER

MR. SINGER has criticised my statement: "Benefits from the federal view point will be maximised when more is spent on backward and poorer areas" on the ground that it is subject to the important limitation that "the productivity of development expenditure is higher in the more advanced parts of a federal union."[2] It should, however, be noted that "productivity" is not the same thing as "benefits" or "welfare." In spite of lower productivity in backward areas it is very likely that, up to a limit, development expenditure in these areas will confer greater benefits because of comparatively lower income and expenditure levels and also because of a greater need for an expansion in employment opportunities. With differences in needs equal "productivity" will yield comparatively greater

[1] ECONOMIC JOURNAL, March 1953, pp. 84–97.

[2] ECONOMIC JOURNAL, September 1953, p. 726.

benefits in poorer or backward areas, and hence, in spite of lower productivity, it will still be advantageous to incur development expenditure in these areas. Just as, while trying to maximise benefits, it is necessary from the " distributive aspect " to spend more on poorer areas, similarly from the " productive aspect " it is desirable to spend more on poorer areas than is justified from considerations of " productivity " alone.

I agree with Mr. Singer that the argument used to deduce the theoretical superiority of a federal world state could " be applied to prove the superiority of a unitary world state as well." But what I was trying to prove was that theoretically a federal union is preferable to sovereign national states. Theoretically, as well as practically, it is not only more difficult for these sovereign states to lose their identity to form a world unitary state but also, as already pointed out by me, for some areas " the political form of government should be federal in character because their regional diversities are unsuited to a unitary constitution." Mr. Singer rightly points out that " transfers of income to poorer units occur even now," but these are not enough. The establishment of a world federal state would enable it to carry such transfers to their logical limit (dictated by the Principle of Federal Finance) and not stop half-way as at present.

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OFFICIAL PAPERS

Food Consumption and Expenditure [1]

Those who stress the importance of quantitative research in the development of the social sciences will welcome this, the second annual report on the results of the Ministry of Food's National Food Survey, not only for its intrinsic interest, but also because it indicates that the research tools provided by a major and continuous budgetary inquiry are being kept in use, tested and further improved. The present report deals with the impact of the declining food supplies and rising prices of 1951 on the diets of households of different social class and composition. No less than fifty-five tables, many of them large, appear among ninety-five paragraphs of text, supplemented by four appendices with a further twenty-eight detailed tables. On the choice of such a

[1] *Domestic Food Consumption and Expenditure, 1951 : Annual Report of the National Food Survey Committee.* (London: H.M. Stationery Office, 1953. Pp. 116. 3*s.* 6*d.*)

format, which is now almost a hallmark of the Food Survey Committee, I will comment later. Meanwhile I would draw the reader's attention to three items of interest.

Of these the first is the imputation of the cash values of the food subsidies to the different social and economic groups. During the second half of 1951 the cash value of the subsidies was equal to 14–15% of all domestic food expenditure on the average; the report shows very little dispersion about this figure in terms of the different social classes, the range being from 13–15% in the lowest group to 11–12% in the highest. On the other hand, an estimate of 10–12% for households with two adults and no children compares with 23% for two adults with four or more children, the trend as the number of children increases being significant and regular. Thus the food subsidies are more relevantly discussed under the heading of population policy than under the heading of redistributive measures as usually understood.

The second item is of interest to those concerned with the actual tools of measurement. Prior to 1951 estimates of food consumption (as opposed to purchases) were obtained for each household surveyed by adjusting the figures for food purchased and obtained free during the week of the survey by the net change in larder stocks which were weighed by the investigator on the first and final day. But it was found that there was a constant tendency for the withdrawals from stock to exceed additions, and in fact during 1950 stock withdrawals contributed some 11% to the total value of food consumption. The writers of the report comment that the act of measuring larger stocks most probably played an important role in this process, since the weighing of stocks: (*a*) interfered with the housewife's shopping time; (*b*) drew the housewife's attention to overlooked stocks; and (*c*) may have induced the housewife to postpone some shopping till after the survey to save trouble. Accordingly, the stock measurements were stopped in 1951, and recorded purchases immediately increased by roughly the amount of previous stock withdrawals. Here, we suggest, is illustrated an important Indeterminacy Principle of budgetary surveys: that attempts to obtain too great a precision of measurement may defeat their object, since the act of measurement has a perceptible influence on the object of observation.

Our third item is concerned with some figures of bread consumption per person tabulated by the number of children in households with two adults. Consumption per person declines steadily with the number of children until households with four or more

children are reached, but at this point turns upwards again. This seems explicable on the following hypotheses: (i) that children require less bread than adults; (ii) that the standard of living of households is inversely correlated with the number of children; (iii) that the income elasticity for bread is negative. As the number of children increase to three, the lower requirements of children cause the figures of consumption per person to fall, but with four children the income effect outweighs the physiological factor. A similar result is noted for the total energy value of the diet. The position of the turning point provides a sort of index of relative poverty associated with the presence of children, and it would be of great interest to know how stable such an index has been over the last two or three years.

This leads us back to the choice of format of the report as a whole. We must sympathise with the Committee in their obvious desire to display the results of their survey in as much detail and in as neutral a manner as possible. But short of publishing each individual budget in full it is clearly impossible to anticipate all future research needs, and we put forward the suggestion that the Committee should now begin to experiment with rather more sophisticated methods of summarisation than have yet been attempted. Modern methods of multivariate analysis are sufficiently advanced and the theory of consumers' behaviour sufficiently operational to make the study of budgetary data particularly fertile at the present time. And who should undertake such a study if not those best acquainted with their data?

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CURRENT TOPICS

An interesting ceremony took place at Kirkcaldy on the afternoon of Saturday, January 23, when a plaque was unveiled to mark the site of the house where Adam Smith lived from 1767 to 1776, and where he completed *The Wealth of Nations*. The house itself was removed in 1834. The plaque now unveiled replaces an earlier one erected in 1919, which, however, in the light of later researches into the life of Adam Smith was found to contain two inaccuracies. It gave the wrong year for the removal of the old house, and it also stated that the site was that of Adam Smith's birth-place. The exact location of his birth-place is still a matter of some doubt, but it is known to have been elsewhere.

The inscription on the new plaque runs as follows : " Adam Smith, 1723–1790, born Kirkcaldy. On this site stood the home of his Mother in which he lived from 1767–1776 and completed ' The Wealth of Nations '. His grave is in the Canongate Churchyard, Edinburgh. Erected 1953." The plaque has been donated by Bailie P. K. Livingstone. It was unveiled by Sir Alexander Gray, who subsequently delivered an address.

Goldsmiths' Company's Library of Economic Literature. In the autumn of 1903 the Worshipful Company of Goldsmiths presented to the University of London the library of historical economic literature collected by Professor H. S. Foxwell, and sold by him to the Company in 1901. To mark the fiftieth anniversary of this generous gift, the Vice-Chancellor of the University of London held a reception at the Senate House on February 12, 1954, which was attended by over three hundred guests, including the Prime Warden and many other members of the Goldsmiths' Company. The University Library, of which the Goldsmiths' Company's Library forms an important part, was open for the occasion, and many notable volumes from the collection were displayed. It is common knowledge that there was a time towards the end of Foxwell's life when his relations with the University of London in so far as they concerned the Goldsmiths' Library were very bad. Indeed, disapproving of the arrangements which had been made for its custody at the time that the University was still housed in the Imperial Institute, he disowned all connection with the Committee of Management and caused this to be announced in a note which is attached to the account of the library which appears in the last edition of Palgrave's *Dictionary of Political Economy*. It is safe to say that were he now living he would have long ago abandoned this attitude. The collection on which he lavished so much loving care is now housed in a princely reading-room in the tower of the Senate House in Bloomsbury. There is no place in London which affords greater amenities to the student of the history of economic thought. In the fifty years since it was given to the University, the collection has doubled in size from some 30,000 to some 60,000 volumes, but it still reflects the dominant interests of its original owner—the development of the thought and legislation on all matters relating to finance, trade and general economic policy in Great Britain and Western Europe from the sixteenth to the nineteenth century.

RECENT PERIODICALS AND NEW BOOKS

Applied Statistics

VOL. III, NO. 1, MARCH 1954. *Production and Administration Cost in Relation to Size of Firm (with Appendix : A Problem of Least Squares Method :* R. BECHHOFER) *:* S. MELMAN. *An Analysis of the Results of a Visual Test of Textile Yarn :* A. G. BAKER, K. W. HILLIER and R. H. WOODWARD. *Who Gets the Medicine ? :* P. G. GRAY and A. CARTWRIGHT. *Too Good to be True ? :* A. STUART. *Some Uses of the Nomogram in Statistics :* S. BROADBENT. *A Neglected Point on the Construction of Price Index Numbers :* A. P. RUDERMAN.

Economica

VOL. XXI, NO. 81, FEBRUARY 1954. *Seasonal Variation in Retail Prices :* R. G. D. ALLEN. *Concerning Utility :* C. KENNEDY. *Credit Rationing and the Relevant Rate of Interest :* J. S. G. WILSON. *Combinations of Capital and of Labour in the English Paper Industry, 1789–1825 :* D. C. COLEMAN. *A Cumberland Colliery During the Napoleonic War :* O. WOOD. *Relative Prices, Expenditure and the Trade Balance :* A. C. L. DAY.

The Review of Economic Studies

VOL. XXI, NO. 55, 1953–4. *The Production Function and the Theory of Capital :* J. ROBINSON. *The Value of Invested Capital :* D. G. CHAMPERNOWNE and R. F. KAHN. *The Production Function and the Theory of Capital : A Comment :* D. G. CHAMPERNOWNE. *More Notes on the Rate of Increase :* D. H. ROBERTSON. *Optimum Tariffs and Retaliation :* H. G. JOHNSON. *A Comparison of Welfare Criteria :* R. E. BALDWIN. *A Note on Variable Prices and Foreign Trade Multipliers :* W. BECKERMAN.

Oxford Economic Papers

VOL. 6, NO. 1, FEBRUARY 1954. *The Trade Cycle in Britain, 1790–1850 :* R. C. O. MATTHEWS. *Notes on Excess Capacity :* M. E. PAUL. *The Process of Imperfect Competition :* J. R. HICKS. *Convertibility :* J. R. SARGENT. *Some Economic Aspects of Compulsory Trade Unionism :* V. L. ALLEN. *An Experiment in Commodity Control—The International Wheat Agreement, 1949–53 :* C. D. HARBURY. *An Alternative Proof of a Theorem in Welfare Economics :* C. KENNEDY.

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VOL. 15, NO. 12, DECEMBER 1953. *A "Human Needs" Diet : Autumn 1953 :* T. SCHULZ. *Relative Real Wages in Swedish Agriculture and Industry, 1930–1950 :* G. R. ALLEN.

VOL. 16, NO. 1, JANUARY 1954. *The Distribution of Private Capital, 1950–51 :* K. M. LANGLEY. *Average Wages in U.S.S.R. : A Rejoinder :* S. M. SCHWARZ; *A Reply :* P. J. D. WILES. *A Note on the Valuation of British Imports :* E. NEVIN.

The Manchester School of Economic and Social Studies

VOL. XXII, NO. 1, JANUARY 1954. *Some Economic Aspects of the Taxation of Companies :* D. WALKER. *The Task and Methods of the Monopolies Commission :* DAME ALIX KILROY. *The Theory of Effective Demand in the 1920's :* D. J. COPPOCK. *British Exports and the Scale of Production :* J. M. JACKSON.

Transactions of the Manchester Statistical Society

SESSION 1952–3. *Some Reflection on the Cost of Atomic Energy :* A. J. BROWN. *Allocation and Programming in Modern Economics :* K. S.

LOMAX. *The Pits of Britain :* SIR HUBERT HOULDSWORTH. *The Task and Methods of the Monopolies Commission :* DAME ALIX KILROY. *Statistics in Industry—a Post-War Review :* T. J. LUNT.

Scottish Journal of Political Economy

VOL. I, NO. 1, MARCH 1954. This is the first issue of the new journal, to be issued three times a year, by the Scottish Economic Society, obtainable from the Editor, 12 Bute Gardens, Glasgow, W.2, or from the publishers, Messrs. Oliver & Boyd, Tweeddale Court, Edinburgh. *The Scottish Economic Society :* A. K. CAIRNCROSS. *The Scottish Society of Economists :* M. T. RANKIN. *Labour Turnover in Shipbuilding :* D. J. ROBERTSON. *The Founding of the Glasgow Chamber of Commerce in 1783 :* H. HAMILTON. *Stability of Membership in Trade Unions :* J. D. M. BELL. *Transport Costs in the North of Scotland :* D. L. MUNBY. *Recent Economic Trends.*

Yorkshire Bulletin of Economic and Social Research

VOL. 6, NO. 1, FEBRUARY 1954. *Students in a Changing World :* F. D. KLINGENDER. *Capacity in the West European Wool Textile Industry :* A. P. ZENTLER and J. GHERSON. *Wages and Earnings in the Sheffield Trades, 1851–1914 :* S. POLLARD. *Some Recent Trends in Trade and Utilization of Vegetable Oils :* J. BELLAMY. *Economic Research by the Trade Unions :* K. J. W. ALEXANDER.

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VOL. VII, NO. 3, MARCH 1954. *The Intelligence of Urban and Rural Children :* W. G. EMMETT. *Intelligence and Family Size :* I. TH. PAPAVASSILIOU. *Theory of Population and Modern Economic Analysis : II :* A. T. PEACOCK. *Immigration of Africans into the British Caribbean :* G. W. ROBERTS. *Population Policy in France : Family Allowances and Other Benefits :* I. C. WATSON.

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VOL. V, NO. 1, MARCH 1954. *The Study of Change in Social Science :* W. HIELD. *Aristocracy and the Middle Class in the British Political Elite 1886–1916 :* W. L. GUTTSMAN. *Suffragium : from Vote to Patronage :* G. E. M. DE STE. CROIX. *Crime or Disease :* A. G. N. FLEW. *The Peasant Movement in Norway : A Study in Class and Culture :* P. A. MUNCH. *Attendance in the Coal Mining Industry :* F. D. K. LIDDELL.

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NEW SERIES, VOL. 1, NO. 2, DECEMBER 1953. *Patrick Geddes (1854–1932) :* H. J. FLEURE. *British Conurbations in 1951 :* G. W. S. ROBINSON. *Liberal Voting at the General Election of 1951 :* E. J. CLEARY and H. POLLINS. *The Economic and Social Position of Negro Immigrants in Britain :* M. BANTON. *The Meaning of the Coronation :* E. SHILS and M. YOUNG. *Peasant Society and the Origins of Romantic Love :* W. STARK. *Some Social Aspects of Recent Changes in Agriculture in West Cumberland :* M. W. WILLIAMS.

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VOL. XXXVIII, SECTION 4, 1946. *The Village in the Outer Isles of Scotland:* W. J. GIBSON.

VOL. XLIII, SECTION 12, 1951. *Book Reviews.*

The Political Quarterly

VOL. XXV, NO. 2, APRIL–JUNE 1954. *Notes and Comments : The Berlin Conference and After. The French Presidency :* D. PICKLES. *India as a Welfare State :* W. A. ROBSON. *Anna Wheeler : a Pioneer Socialist and Feminist :* R. K. B. PANKHURST. *Industrial Unrest and the Wage Problem :* B. C. ROBERTS. *The American Presidential System :* N. L. STAMPS. *The Penal Code and the Use of Force :* S. ALDERSON.

Political Studies

VOL. II, NO. 1, FEBRUARY 1954. *Interests :* J. PLAMENATZ. *County Administration of Planning Controls :* P. G. RICHARDS. *In Defence of Apathy : Some Doubts on the Duty to Vote :* W. H. MORRIS JONES. *Problems of the Fourth Republic :* P. M. WILLIAMS. *Representation in Plural Societies :* W. J. M. MACKENZIE. *Administrative Theory in the United States : A Survey and Prospect :* D. WALDO.

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VOL. V, NO. 4, APRIL 1954. *The Soviet Engineering Industries :* S. LAMET. *Soviet Documents, September 1952—December 1953 :* J. MILLER.

Accounting Research

VOL. 5, NO. 1, JANUARY 1954. *Recent Developments in National Income and Social Accounting :* M. GILBERT and R. STONE. *Costing Terminology* J. KITCHEN. *Net Taxable Wealth, Income, and Age of Directors and Executive Directors of Larger Swedish Companies :* G. LINDGREN. *The Mathematics of Variance Analysis—III—The Theory of N Variance Systems :* G. AMERMAN. *The Valuation of Goodwill :* J. TAYLEUR.

The Incorporated Statistician

VOL. 4, NO. 4, DECEMBER 1953. *The Work of the Central Statistical Office :* H. CAMPION. *International Statistics for Governments and Business :* J. ROGERS and J. I. MASON. *Cost Calculations for Sequential Sampling Schemes :* D. G. CHAMPERNOWNE.

The Banker

VOL. CII, NO. 337, FEBRUARY 1954. *Dollar Cloud over Sydney. Britain in a Competitive World. The Malaise in Industrial Relations. Credit Expansion Analysed. The Banks and their Dividends. Death Duties and the Private Company :* G. LEE.

VOL. CII, NO. 338, MARCH 1954. *This Booming Recession. Convertibility —Whose Move Next ? After Randall—An American Assessment :* R. N. GARDNER. *Japan's Challenge in Asian Markets. Sweden's Uneasy Stability. The German Surplus in Perspective :* E. T. NEVIN and H. LOHMANN. *Rule in Turquand's Case : A Reconsideration :* S. G. MAURICE. *The Changing Pattern of Irish Banking. A Prosperous Year for Life Assurance.*

VOL. CII, NO. 339, APRIL 1954. *Budgeting on the Edge. Public Finance and the Welfare State :* A. T. PEACOCK. *Financing East–West Trade. Can France Afford Reflation ? Changing Trends in American Banking. Welsh Industry Takes Stock :* E. V. MORGAN.

The Bankers' Magazine

NO. 1319, FEBRUARY 1954. *Open and Hidden Reserve. Banking Profits in 1953. International Survey :* H. E. EVITT.

NO. 1320, MARCH 1954. *The Future of Sterling. The Bank Balance Sheets. Banking and Economic Conditions in Ireland in 1953. Must Charity be Efficient ? :* D. PALUSTER.

NO. 1321, APRIL 1954. *The Fiscal Morass. The Impact on the British Economy of an American Recession :* H. C. HILLMANN. *A Bundle of Old Documents :* C. E. HICKS.

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VOL. XXIX, NO. 1, FEBRUARY 1954. *The Chairmen's Statements. Banks and the Bank Rate. Freedom for Commodities. Bahrain and Qatar.*

District Bank Review

NO. 109, MARCH 1954. *Canada : Britain's Test :* T. W. KENT. *The Structure and Problems of the Sheffield Cutlery Trade :* H. TOWNSEND. *Two Points of View. The Future of Technological Education.*

Lloyds Bank Review

No. 32, April 1954. *Some Doubts about Sterling Area Policy :* Sir Sydney Caine. *How Much Agriculture ? :* Sir Ralph Enfield. *Air Commerce and Air Power :* M. G. Ionides.

Midland Bank Review

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NO. 2, 1954. *The 1954 Czechoslovak State Plan. Speech of the Chairman of the State Planning Commission, J. Půčik, to the National Assembly on 20 January 1954. Commerical Production in Agriculture under Capitalism and under Popular Democracy :* F. STOČES. *The Militarisation of Western Germany is Aggravating the Contradictions of Imperialism :* A. NUOŠKA. *The Investment Plan and its Objects :* K. SECOMSKI.

Gospodarka Planowa (Polish Text)

NO. 1, 1954. *The New Tasks of Our Periodical. Regional Planning and the Economic Expansion of Underdeveloped Areas :* K. DZIEWOŃSKI. *Repair Services in the 1954 Plan :* K. SECOMSKI. *For a More Rapid Development of the Artificial Fertilizer Industry :* A. RADLIŃSKI. *Intrafactory Planning in Tobacco Mills :* J. BRYDA and H. DOMAŃSKI. *The Continual Increase of Labour Productivity under Socialist Production :* M. YAMPOLSKY. *The Socialist World Market and Long Term Planning :* M. RAKOWSKI. *Some Questions in Planning Production Cost Decreases in Industry :* Z. AUGUSTOWSKI. *On the Proper Planning of Scientific Research :* W. ŚWIEŻEWSKA.

NO. 2, 1954. *Current Problems of Technical Progress :* E. SZYR. *The Maximization of Productive Capacity Use :* B. BALIŃSKI. *The New Tasks of the Agricultural Engineering Industry :* J. DRZEWIECKI. *The*

Tasks of Consumer Co-operatives in Meeting Rural Demand : J. MARECKI. *The Expansion of Production and the Purchase of Domestic Raw Materials for Consumer Goods Industries :* W. PLOŃSKI. *The 1954 Building Repairs Plan :* M. SOCHA. *The Improvement of Economic Work in Local Planning Commissions :* Y. CHADAEV. *Questions of the Development of Housing and Communal Building :* I. IVANOV. *Agriculture in the Peoples' Democracies and in Capitalist Countries :* J. WERNER. *The Economic Achievements of China :* J. SZEWIEJA. *U.S. Discrimination in Latin America :* L. GÓRNIK.

Ekonomist (Serb Text)

No. 1, 1953. *The Problem of Surplus Rural Population :* N. COBELJIĆ and K. MIHAILOVIĆ. *Two Systems of Viability in Our Economic Enterprises :* K. VASILJEVIĆ. *The 1953 Economic Plan :* B. J. COPPER. *Production in Serbia :* E. BERKOVIĆ. *The British Economy at the Crossroads :* V. MILENKOVIĆ and M. HUBENI. *Industrial and Mining Investment in Serbia in 1947–51 :* V. PEJOVSKI. *An Inquiry in Rural Wood Consumption in Serbia :* B. BABIĆ. *Economists of the XVII and XVIII Centuries:* B. SOSKIĆ. *Joan Robinson and the Economics of Imperfect Competition :* P. MIHAILOVIĆ.

No. 2, 1953. *The Structure of the Population :* M. MACURA. *Certain Questions of the Development of Our Economic System :* J. RADOKOVIĆ. *Oligarchic Tendencies on the Foreign Exchange Market :* V. PERTOT. *The Serbo-Bulgarian Customs Union of 1905 :* C. KOSTIĆ. *The Index of Industrial Production :* M. NIKOLIĆ. *Some Considerations on the Fuel Problem in Yugoslavia :* N. DRAGIĆEVIĆ. *The Development of Railways in Yugoslavia :* M. STEFANOVIĆ.

No. 3, 1953. *Boris Kidrič :* V. BEGOVIĆ. *Certain Principles of Our Economic System and the Problem of their Application :* R. UVALIĆ. *Concerning My Article on the Law of Value :* A. BAJT. *The World Market and the Increasing Importance of Economic Intercourse :* D. TODOROVIĆ. *The Nature and Future of the Common Market for Coal and Steel :* V. MILENKOVIĆ. *Methods of Calculating the Volume of Foreign Trade and the Balance of Trade :* M. PEROVIĆ. *Handicrafts in the New Economic Conditions :* S. BLAGOJEVIĆ. *Goods–Money Relationships and the Vojvodina Market in 1952 :* M. M. STEVAN. *Postwar British Agriculture :* P. MIHAILOVIĆ.

No. 4, 1953. *The Credit System Under the Draft Economic Regulations :* K. VISILJEVIĆ. *The Economic Unit and the Theory of Marginal Value :* M. SAMARDŽIJA. *Problems of Monetary Circulation and the Volume of Money :* M. VUCKOVIĆ. *The Economy and the General Plan for Urban Development :* P. IVANDEKIĆ. *Changes in Employment in Yugoslavia Between 1945 and 1952 and Prospects for the Future :* I. LAH. *A Contribution to the Discussion on Planning :* B. SABLJIĆ.

No. 5, 1953. *The Economic Functions of the Commune :* D. J. *The Judicial Aspect of the Draft Law on the Management of the Basic Funds of Economic Organisations :* A. GAMS. *Incentives to Workers through Self-management :* S. KUKOLEČA. *Survey of the Principles of the Draft Law on Commercial Activity :* S. DUROVIĆ. *Problems of Economic Development in Underdeveloped Countries :* L. MATES.

No. 6, 1953. *Peasant Purchasing Power Before and Since the War :* D. COBELIĆ. *Some Observations on the Present Day Capitalist Enterprise :* K. MITRESKI. *The Draft Industrial Plan for Yugoslavia for 1954 :* R. NIKETIĆ.

Izvestia na Vishia Finansovo-Stopanski Institut (Bulgarian Text, Russian and German Summaries)

VOL. VI, No. 4. *The Concept of Insurance :* V. GAVRISKI. *The Maximisation of Profits in U.S. Industrial Monopolies :* CH. BEYAZOV. *The Unified Budget and the Building of Socialism in Our Country :* R. ANGELOV. *The Development of Savings in Bulgaria :* M. RUSENOV.

NEW BOOKS

British

ALLEN (G. C.) and DONNITHORNE (A. G.). Western Enterprise in Far Eastern Economic Development. China and Japan. London: Allen & Unwin, 1954. 9″. Pp. 292. 20*s*.

[To be reviewed.]

ALLEN (V. L.). Power in Trade Unions. A study of their organization in Great Britain. London: Longmans, 1954. 9″. Pp. 323. 25*s*.

[To be reviewed.]

AMERY (L. S.). A Balanced Economy. London: Hutchinson, 1954. 9″. Pp. 263. 12*s*. 6*d*.

[To be reviewed.]

CARTER (C. F.), MEREDITH (G. P.) and SHACKLE (G. L. S.) (Eds.). Uncertainty and Business Decisions, a Symposium. Liverpool: Liverpool University Press, 1954. 9″. Pp. 104. 10*s*. 6*d*.

[To be reviewed.]

CHAUNDY (T. W.), BARRETT (P. R.) and BATEY (C.). The Printing of Mathematics. Aids for authors and editors and rules for compositors and readers at the University Press, Oxford. London: Oxford University Press, 1954. 9½″. Pp. v + 105. 15*s*.

[This book is intended primarily to help a printer: it publishes, among other things, the rules for the composition of mathematics at the Oxford University Press. But it includes sixteen invaluable sections of recommendations to mathematical authors, and an appendix on legible handwriting which any editor who has struggled with the customary confusions in authors' manuscripts between Greek "ν's" and italic Roman "*v*'s" will heartily endorse. The book begins with the necessary minimum of information about the mechanics of printing, and especially mathematical printing. It goes on to explain what can and what cannot readily be set by the usual Monotype machine and the ways in which the difficulties of printing can be increased or diminished by alternative presentations of exactly the same material. Authors who are frequently concerned in the preparation of mathematical articles will find this book of considerable help to them.]

CARTER (C. F.) and ROY (A. D.). British Economic Statistics. A report. National Institute of Economic Research, Economic and Social Studies, No. XIV. London: Cambridge University Press, 1954. 9½″. Pp. 118. 21*s*.

[To be reviewed.]

DAY (A. C. L.). The Future of Sterling. London: Oxford University Press, 1954. 7½″. Pp. v + 227. 12*s*. 6*d*.

[To be reviewed.]

The Economic Future of Europe. Preliminary papers of the Second Conference of Westminster 1954 organized by the European Movement. London: André Deutsch, 1954. 9″. Pp. 188. 15*s*.

[These eight rather miscellaneous papers are all concerned more or less closely with the consequences of moving towards European economic unification. The monetary, institutional and social aspects of the question are among the topics discussed, and two long descriptive papers are also included on recent developments and prospects with regard to production and investment.]

FFORDE (J. S.). The Federal Reserve System 1945–1949. London: Oxford University Press, 1954. 8½″. Pp. vii + 351. 35*s*.

[To be reviewed.]

GRONDONA (L. ST. C.). Commonwealth Stocktaking. London: Butterworth, 1953. 10″. Pp. v + 389. 35*s*.

[To be reviewed.]

HAWTREY (R. G.). Towards the Rescue of Sterling. London: Longmans, 1954. 7½″. Pp. 159. 12*s*. 6*d*.

[To be reviewed.]

HAYNES (W. W.). Nationalization in Practice: The British Coal Industry. London: Bailey Bros. and Swinfen, 1953. 8½″. Pp. v + 413. 32*s*.

[To be reviewed.]

Industry and Science. A study of their relationship based on a survey of firms in the Greater Manchester area carried out by the Manchester Joint Research Council, 1950–1953. Manchester: Manchester University Press, 1954. 9″. Pp. 188. 12*s*. 6*d*.

[To be reviewed.]

KALECKI (M.). Theory of Economic Dynamics. An essay on cyclical and long-run changes in capitalist economy. London: Allen & Unwin, 1954. 9″. Pp. 178. 18*s*.

[To be reviewed.]

KOCHAN (L.). Russia and the Weimar Republic. Cambridge: Bowes & Bowes, 1954. 8½″. Pp. vii + 190. 25*s*.

[This scholarly and well-written monograph provides an extremely interesting analysis of the varying relations between Soviet Russia and Germany in the years from 1919 to 1934. It has a topical interest which stands out very plainly, even though the author does not choose to spell it out explicitly. The basis of the alliance represented by the 1922 Treaty of Rapallo was twofold: Germany needed a Russian alliance to strengthen her hand in attempts to secure a revision of Versailles, while the friendship or at least neutrality of Germany provided Russia with the assurance that she would not be faced with a united bloc of hostile capitalist countries. The result of the alliance which the Russians did not foresee was that German strength was helped to grow to the point where Germany instead of the Entente became the danger against which Russia was obliged to seek a counter-weight. The author casts some interesting light also on issues of domestic policy: for example, the strength of Communist hostility to the German Social Democrats is traced in large part to the Western orientation of the latter, which threatened to bring about a *rapprochement* between Germany and the victors of Versailles and so bring to an end the disunity amongst capitalist countries which the Russians felt to be essential to their security.]

MCCULLOCH (J. R.) (Ed.). Early English Tracts on Commerce. A reprint of the very rare collection of tracts prepared in 1856 for the Political Economy Club. London: Cambridge University Press, 1954. 9″. Pp. 663. 35*s*.

[McCulloch's collection of Tracts was first published in 1856 in an edition of a hundred copies for the Political Economy Club. The present edition was reprinted photographically in 1952 for the Economic History Society from a copy which had passed into the possession of Montagu Norman, Governor of the Bank of England, from his father and grandfather, a founder-member of the Club. The Economic History Society has now made the new edition generally available to teachers and students.]

MACKENZIE (SIR C.). Realms of Silver. One hundred years of banking in the east. London: Routledge & Kegan Paul, 1954. 10″. Pp. v + 338. 25*s*.

[To be reviewed.]

MATTHEWS (R. C. O.). A Study in Trade-Cycle History. Economic fluctuations in Great Britain 1833–42. London: Cambridge University Press, 1954. 9½″. Pp. xiii + 228. 25*s*.

[To be reviewed.]

NATIONAL INSTITUTE OF ECONOMIC AND SOCIAL RESEARCH. Annual Report 1953. London: The National Institute of Economic and Social Research, 1953. 9½″. Pp. 43.

[Admirably full descriptions are given of the research currently in progress or projected, including the work done by the Institute in connection with the government's Conditional Aid Economic Research Programme.]

PARKER (R. S.) (Ed.). Economic Stability in New Zealand. Wellington: New Zealand Institute of Public Administration, 1953. 9″. Pp. 146. 13*s*. 6*d*.

[To be reviewed.]

PEACOCK (A. T.) (Ed.). Income Redistribution and Social Policy. A set of studies. London: Jonathan Cape, 1954. 9″. Pp. 296. 25*s*.

[To be reviewed.]

Proceedings of the Eighth International Conference of Agricultural Economists. London: Oxford University Press, 1954. 9″. Pp. v + 608. 42*s*.

[This impressive volume records the proceedings of the Conference held at Michigan State College in 1952. The twenty-four papers cover a wide variety of topics. Among those to which particular attention is given are the economics of population and food supply (discussed in papers by F. W. Notestein, J. D. Black and S. R. Sen), agricultural development in less advanced areas (papers by K. Brandt, J. R. Raeburn and M. Ezekiel and A. Saco) and national agricultural policies (papers by E. G. Nourse and E. M. H. Lloyd).]

RICHARDSON (J. H.). An Introduction to the Study of Industrial Relations. London: Allen & Unwin, 1954. 9″. Pp. 442. 30*s*.

[To be reviewed.]

RIX (M. S.). Stock Market Economics. A text-book on the economics of marketable securities in this country. London: Pitman, 1954. 9″. Pp. v + 284. 25*s*.

[To be reviewed.]

ROBERTSON (SIR DENNIS). Britain in the World Economy. The Page-Barbour Lectures for 1953 at the University of Virginia. London: Allen & Unwin, 1954. 8″. Pp. 92. 7*s*. 6*d*.

[To be reviewed.]

STONE (J. R. N.) assisted by ROWE (D. A.) and by CORLETT (W. J.), HURSTFIELD (R.) and POTTER (M.). The Measurement of Consumers' Expenditure and Behaviour in the United Kingdom 1920–1938. Studies in the National Income and Expenditure of the United Kingdom, No. I. London: Cambridge University Press, 1954. 12½″. Pp. vii + 448. 105*s*.

[Reviewed by Professor R. G. D. Allen in the March issue.]

THOMAS (BRINLEY). Migration and Economic Growth. A study of Great Britain and the Atlantic economy. National Institute of Economic and Social Research, Economic and Social Studies, XII. London: Cambridge University Press, 1954. 9½″. Pp. v + 362. 42*s*.

[To be reviewed.]

TUSTIN (A.). The Mechanism of Economic Systems. London: Heinemann, 1954. 9″. Pp. v + 161. 25*s*.

[To be reviewed.]

TWYMAN (F.). Some New Proposals for the amelioration of the Balance of Payment Position. Published privately, copies obtainable from the author, 41 Tavistock Court, Tavistock Square, London, W.C.1. 8½″. Pp. 16.

[The author criticises certain aspects of the policy of the Coalition and Labour Governments and assesses the extent to which alternative policies which he proposes would be capable of alleviating our economic problems. His three chief suggestions are the requisitioning of factories engaged in the production of non-essentials, the optional substitution of apprenticeship combined with part-time education in place of full-time education for juveniles aged fourteen to sixteen and the encouragement of industrial investment on the part of those who at present waste their money on gambling.]

Indian

DANDEKAR (V. M. and K.). Survey of Fertility and Mortality in Poona District. Gokhale Institute of Politics and Economics, Publication No. 27. Poona: Gokhale Institute of Politics and Economics, 1953. 9½″. Pp. 191. 7*s*. 6*d*.

[This survey, conducted with a grant from the Rockefeller Foundation, was principally designed to throw light on differential fertility in Indian conditions. More detailed analysis than had been applied in earlier investigations in Poona and in Kohlapur revealed "some difference in fertility as between castes and between economic classes. It is at the same time clear that this difference in fertility is not very marked. It may be that we have here a situation wherein the transition to new conditions is being only slowly revealed in the total mass of statistics." The authors suggest that there are signs of the emergence of new conditions, more similar to those in western industrialised countries. An ambitious inquiry into family planning yielded most interesting results. Dr. Gadgil's view, expressed in a Foreword, is that "there exists no important element in the socio-economic framework or in the ideological make-up of the people which would make progress impossible if a movement towards family planning is launched appropriately."]

HOUGH (E. M.). The Co-operative Movement in India, before Partition and in Independent India. Third enlarged edition. Calcutta: Oxford University Press, 1954. 9″. Pp. vii + 435. 25*s*.

[This is a third edition of a new well known standard authority on the subject. The first edition was reviewed by Professor Findlay Shirras in the ECONOMIC JOURNAL of June 1933; the second edition was noted in the issue of March 1951. The new edition has been prepared by Shri K. Madhava Das, of the staff of the Reserve Bank of India, who has provided a final chapter of some thirty pages in which he surveys the recent trends of the various types of co-operative activity. He sees plenty of opportunities for detailed improvement. He stresses that "the movement constitutes, either actually or potentially, the most important institutional agency for the provision of rural credit." But he emphasises also that in view of the importance attached to a planned programme of development, "it is very necessary to strike a note of caution against the dangers of hasty expansion leading to the neglect of sound banking principles in the anxiety to implement the planned programme."]

VIVEK. India Without Illusions. Bombay: New Book Co., 1953. 9″. Pp. 216. Rs. 4/4.

[The pseudonym of Vivek conceals the lively personality of Mr. A. D. Gorwala, whose interesting small book, *The Rôle of the Administrator, Past, Present and Future*, was noted in this JOURNAL in June 1953. The present volume contains reprints of some of the weekly articles which he has contributed between December 1950 and June 1953 to the *Times of India*. They re-read much better than most similar articles succeed in doing. They cover a wide range of topics. First come a series on foreign affairs, with groups on Communism, on China and on relations with the various great powers. An English reader may perhaps be forgiven for finding special pleasure in what the author wrote about "this remarkable transformation of old enmity into new amity" on Coronation Day. A group deal with internal problems—Communist pressures, integrity in public office, the future of the Princes, the failure of prohibition and so on. A final group discuss economic problems—population increase, food scarcity, economic planning, taxation and the like. Throughout one is doubly impressed by the author's judgment and wisdom and by his knack of saying the right thing in the right words.]

American

BAKKEN (H. H.). Theory of Markets and Marketing. Madison, Wisconsin: Mimir Publishers, 1953. 9½″. Pp. 362.

["The author's intention in this book is to present in broad outlines a general theory of the evolution of market institutions. . . . His objective is sought in what may be considered an unorthodox manner by calling into play a combination of disciplines such as economic history, law and institutional economics." Thus he prefers an institutional approach. ("The institution is a generic concept applied to the whole framework of socio-economic and legal relationships involved in a system of transactional economics.") The result seems a curious mixture which many readers will find irritatingly discursive. Modern markets and marketing are confined to organised produce markets. The sketch history in Chapter V of the development of the Chicago Grain Market seems to open the way for an economic study of organised speculation, but instead the following chapters are entitled "Legality of Futures Trading" and "The Concept of Futurity." Chapter VIII, "The Law of the Markets," is occupied by a discussion of Say's Law, and the next three chapters contain somewhat rambling disquisitions on "Perfect Market Concepts," "Just Price and Fair Value" and "Industry Pricing." This comprises Part I, "Theoretical Bases"; Part II is composed of three chapters on "Primitive and Tribal Trade," "The Era of Pagan Commerce" and "Medieval Fairs"—chapters which seem oddly unrelated to each other or to Part I. It may be that this book will be useful to students in the United States; it is doubtful whether many English readers will appreciate it.]

BECKER (J. M.). The Problem of Abuse in Unemployment Benefits. A study in limits. New York: Columbia University Press (London: Geoffrey Cumberlege), 1954. 9½″. Pp. xv + 412. 52*s*.

[This work is based on a study of American experience during the reconversion period 1945–47, when the problem of abuse of unemployment benefits might be expected to have been most acute. While one of the author's chief contentions is that the information currently available is inadequate to show the extent of abuse, he concludes with some confidence that the comparative liberality of the system, based as it is on a "status" rather than a "subsistence" norm, did not during the period have any significant effect in hampering the reconversion process or in diminishing employment.]

BRANDT (K.) in collaboration with O. SCHILLER and F. AHLGRIMM. Management of Agriculture and Food in the German-Occupied and Other Areas of Fortress Europe. A study in military government. Stanford University Food Research Institute Series on Food, Agriculture, and World War II. Stanford, California: Stanford University Press (London: Geoffrey Cumberlege), 1954. 9½″. Pp. ix + 707. 80*s*.

[To be reviewed.]

BRINEGAR (G. K.) and JOHNSON (S.). **The Market for Fluid Skim Milk.** Storrs, Connecticut: Storrs Agricultural Experiment Station, University of Connecticut, 1953. 9″. Pp. 43.

[This is based on a general survey of sales of skim milk throughout the United States and a more detailed survey of sales in Connecticut. Sales of skim milk have shown a very strong upward trend in recent years. The authors' computations indicate that the demand is very elastic (a price-elasticity of −4·0 is found), and they suggest that a reduction in prices would be beneficial to dealers and dairy farmers, as well as to consumers.]

THE BROOKINGS INSTITUTION. **Major Problems of United States Foreign Policy 1954.** Washington: The Brookings Institution, 1954. 9½″. Pp. v + 429. $4.

[This follows the usual lines of the Brookings Institution's annual surveys. While not on the whole distinguished for originality or analytical flair, it provides a comprehensive and convenient source of reference on the arguments currently canvassed in the United States in the various fields of foreign policy. It contains also some useful and objective historical sections, summarising the background of present-day problems.]

COCHRAN (T. C.). **Railroad Leaders 1845–1890. The business mind in action.** Cambridge, Mass: Harvard University Press (London: Geoffrey Cumberlege), 1953. 9½″. Pp. 564. 60*s*.

[To be reviewed.]

CONFERENCE OF NEW ENGLAND GOVERNORS. **Report on the New England Textile Industry.** Cambridge, Mass.: Conference of New England Governors, 1953. 10″. Pp. v + 317. $2.

[The decline of the New England textile industry is of interest to the British reader because of the unhappy similarity between New England and Lancashire, and the contrast with the newer and more progressive textile regions. The bulk of this report, prepared by a Committee appointed in 1952 at the time of the textile recess, with Professor Seymour Harris as Chairman, is taken up by a research study for which Professor Harris is solely responsible. The agreed report of the Committee was largely based on that study, which brings together a great deal of extremely interesting material on all aspects of the United States industry, though it contains little that is new to those familiar with Professor Harris's *The Economics of New England*, reviewed in the ECONOMIC JOURNAL of December 1953. The striking fact which emerges is the narrowing of the wage differential between South and North from 63 to 92·5% since the beginning of the century. This belies the conclusion that the major explanation of New England's decline is the large differential. That in spite of this narrowing of the margin New England lost ground would seem to be due to the fast-growing productive efficiency of the South. The other interesting fact which emerges is that at present it is the woollen and worsted industry of New England, rather than the cotton textile industry, that is threatened by the more efficient competition of the South. The recommendations for action are neither impressive nor progressive. While there are various suggestions for making New England more efficient, there seems to be equal emphasis on making the South a similarly high-cost producer. And to keep out foreign competition, it is recommended that tariffs on textile products be not reduced.]

DEARBORN (DEW. C.), KNEZNEK (R. M.) and ANTHONY (R. N.). **Spending for Industrial Research, 1951–1952.** Boston, Mass.: Division of Research, Harvard Graduate School of Business Administration, 1953. 11″. Pp. iii + 103. $2.50.

[This records the results of three separate surveys, covering respectively 4,800, 1,450 and 191 companies. It is estimated that the total cost of research carried out or financed by industrial firms in the United States in 1951 amounted to some $2,500 million. The detailed tables analyse this expenditure by industry group, size of firm, purpose of research and other categories.]

FRIEDMAN (M.). Essays in Positive Economics. Chicago: University of Chicago Press (London: Cambridge University Press), 1954. 9½". Pp. v + 328. 43*s*. 6*d*.

[To be reviewed.]

HICKMAN (W. B.). The Volume of Corporate Bond Financing since 1900. National Bureau of Economic Research, Financial Research Program, Studies in Corporate Bond Financing, No. I. Princeton, New Jersey: Princeton University Press, 1953 (London: Geoffrey Cumberlege, 1954). 9½". Pp. xi + 429. 60*s*.

[To be reviewed.]

HULTGREN (T.) assisted by W. I. GREENWALD. Transport and the State of Trade in Britain. National Bureau of Economic Research, Occasional Paper No. 40. New York: National Bureau of Economic Research, 1953. 9". Pp. ix + 114. $1.50.

[This Occasional Paper in the National Bureau series is of more specialised interest than would appear from the title. It is designed as a contribution to the Burns–Mitchell analysis of trade-cycle histories. It examines the fluctuations of the carriage of goods and passengers by the railways and their capital investment and renewals in relation to the Burns–Mitchell "reference" cycles. The analysis is thorough and elaborate, but in presentation at least the authors go little below the surface of the statistics, and after a time a reader familiar with the period will ask himself whether they have taken full account of factors other than cyclical which were at work. In general, cycles in railway traffic corresponded with the cycles of business; the authors adduce evidence to suggest that the railways lost part of their share of the carriage of heavy goods other than coal to other means of transport during a contraction and regained it during an expansion; but during the twenty's and thirty's the latter slowed up the process of diversion rather than reversed it. Down to 1912 passenger travel increased annually, with the exception of three individual years, when the decline was almost negligible. After 1919 cyclical variations were more apparent, following closely the "reference" cycles. As might be expected, equipment was not appreciably changed in total over the cycle: it was used more or less intensively, and expansion tended to mean heavier truck-loads and train-loads but slower movement. Maintenance of track was more stable than traffic. Purchases of locomotives and rolling stock varied with the cycle, and roughly to the same extent; fluctuations of traffic were not translated into exaggerated fluctuations of equipment, and delays in production from time to time implied that investment was actually counter-cyclical.]

Institutions and Individuals. An annotated list of directories useful in international administration. Compiled by Katrine R. C. Greene. Chicago: Public Administration Clearing House, 1954. (Distributed outside the U.S.A. and Canada by Martinus Nijhoff, The Hague). 11". Pp. 56. $2.80 or 10.75 guilders.

[An annotated list of over 200 directories and other works of reference is preceded by an introduction containing useful hints on how to use the list and the directories enumerated in it. It is suggested that the chief value of the list will be to public servants working outside their own countries.]

KYRK (H.). The Family in the American Economy. Chicago: University of Chicago Press (London: Cambridge University Press), 1954. 9½". Pp. v + 407. 45*s*.

[The scope of this unusual text-book is defined as the economics of family life in the United States. The chief topics included are the structure of the family, the size, sources and adequacy of family incomes, the cost of living, social security and other supplements to current earnings, the division of labour and economic relations between members of the family, and what Wesley Mitchell called "the backward art of spending money." The author writes in a clear style, and much of what she has to say is interesting and suggestive.]

LAMBIE (J. T.) and CLEMENCE (R. V.) (Eds.). Economic Change in America. Readings in the economic history of the United States. Harrisburg, Pennsylvania: The Stackpole Company, 1954. 9″. Pp. iii + 599. $5.75.

[To be reviewed.]

MCLEAN (J. G.) and HAIGH (R. W.). The Growth of Integrated Oil Companies. Boston, Mass.: Harvard Graduate School of Business Administration, 1954. 11½″. Pp. vii + 728. $12.

[To be reviewed.]

MALENBAUM (W.). The World Wheat Economy 1885–1939. Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1954. 8½″. Pp. vii + 262. 48*s*.

[To be reviewed.]

MILLIKAN (M. F.) (Ed.). Income Stabilization for a Developing Democracy. A study of the politics and economics of high employment without inflation. New Haven, Conn.: Yale University Press, 1953 (London: Geoffrey Cumberlege, 1954). 9″. Pp. v + 730. 40*s*.

[The editor of this symposium confesses in an unusually candid preface that, in his judgment, only limited success attended the strenuous efforts that were made by himself and his contributors to form the various chapters into a unified whole by means of continual oral and written consultation. It is true that the contributors—the majority of whom are connected with Yale University—retain their individual standpoints. The editor is to be congratulated, however, on his success in avoiding overlapping and in so providing a comprehensive survey of current American opinion on different aspects of the problem of income stabilisation in the light of post-war experience. The contributions are not for the most part very profound or original, but the standard of competence is high and the volume as a whole is extremely suitable for recommendation to undergraduate students.]

PHELPS (C. W.). Instalment Sales Financing: Its Services to the Dealer. Baltimore: Commercial Credit Company, 1953. 9″. Pp. 99.

[This is a sequel to the same author's earlier publication, *The Role of the Sales Finance Companies in the American Economy*, which was noted on p. 254 of the ECONOMIC JOURNAL of March 1953. The author describes the procedure by which sales finance companies provide credit to facilitate the distribution of automobiles and other consumer durables all the way from the factory to the consumer. He contrasts favourably this system of integrated finance—as practised, for example, by the Commercial Credit Company, which sponsors and publishes his monograph—with the system of direct loans to consumers, which is adopted by other types of loan company.]

PHILIPP (P. F.). Diversified Agriculture of Hawaii. An economist's view of its history, present status, and future prospects. Honolulu, Hawaii: University of Hawaii Press, 1953. 8½″. Pp. 226. $3.75.

[This is a detailed factual study of the agricultural industries of the Hawaiian islands, excluding the two staples, sugar and pineapples. In the author's opinion, the development of a more diversified agriculture is essential to strengthen the islands' economy and to surmount the problems that confront it. The chief of these problems are an adverse balance of payments, a tendency to increasing unemployment and excessive vulnerability to a depression in the United States.]

THE RUSSELL SAGE FOUNDATION. Annual Report 1952–1953. New York: Russell Sage Foundation, 1954. 9″. Pp. 59.

[The chief field of the Foundation's research, as described in this report, lies in social work, especially social medicine. Research activities are carried out directly by the Foundation.]

SMITH (A. H.). Economics for our Times. Second edition revised. New York & London: McGraw-Hill, 1953. 9″. Pp. vii + 534. 29*s*.

[This is a revised edition of an extremely elementary and mainly descriptive introduction to economics, designed for use by American high school students. It is profusely illustrated with photographs, cartoons and diagrams of varying degrees of relevance.]

SOCIAL SCIENCE RESEARCH COUNCIL. Annual Report 1952–3. New York: Social Science Research Council, 1954. 9″. Pp. 78.

[This gives particulars of the membership and activities of the thirty or so committees on different branches of the social sciences through which the Council operates. The President's report reviews more general aspects of the Council's work. "It sees its functions as those of planning, stimulating, and initiating research rather than conducting projects that can be done more appropriately by other organisations."]

SPENCER (L.) and JOHNSON (S.). Milk Distribution and Pricing in Great Britain, with special attention to the British experience with rationalization plans. Ithaca, N.Y.: Cornell University Agricultural Experiment Station, 1953. 9″. Pp. 147.

[The chief purpose of this analysis of milk distribution in Britain between 1938 and 1952 is to cast light on the analogous problems that arise in the United States. The authors have undertaken extensive field work in this country, and they present a clear and competent historical survey. Particular attention is paid to the unified system of collecting milk from farms and to the zoning system in urban delivery. The authors find that both these systems enjoyed a large measure of success, and they are inclined to regard as a mistake the withdrawal of official support from the zoning system in 1948. Both systems might, they suggest, be capable of bringing about substantial economies if applied in the United States, though considerable opposition would be likely to stand in the way of their acceptance.]

Swedish

THE CENTRAL ORGANISATION OF ACADEMICS IN SWEDEN. Academic Trade Unions in Sweden. Stockholm: Sveriges Akademikers Centralorganisation, 1953. 8½″. Pp. 20.

["Academic" trade unions in Sweden are those that cater for university graduates, *i.e.*, the professions. At the beginning of the 1940s salary scales in certain of the professions were extremely low, especially in the starting grades, and the development of professional organisations since then has brought about a marked improvement. The Central Organisation of Academics, by which the present pamphlet is issued, is a federation of these organisations.]

Italian

EINAUDI (L.). Saggi Bibliografici e Storici intorno alle Dottrine Economiche. Rome: Edizioni di Storia e Letteratura, 1953. 10″. Pp. 367. Lire 4,000.

[To be reviewed.]

Polish

LANGE (O.). Zagadnienia Ekonomii Politycznej. Warsaw: Panstwowe Wydawnictwo Naukowe, 1953. 7½″. Pp. 160.

[To be reviewed.]

Japanese

SCIENCE COUNCIL OF JAPAN. The Japan Annual of Law and Politics. No. 2, 1953. Tokyo: Second Division, Science Council of Japan, 1953. 10". Pp. 210.

[This contains nine essays by Japanese scholars, six translated into English, two into German and one into French. Of these essays, that by Isao Kikuchi on "Freedom of Association and Unfair Labour Practices" is the only one that is directly connected with economics.]

Official

BRITISH

INTERDEPARTMENTAL COMMITTEE ON SOCIAL AND ECONOMIC RESEARCH. Guides to Official Sources: III. Local Government Statistics. London: H.M. Stationery Office, 1953. 9½". Pp. 34. 1*s.* 6*d.*

[Like its two predecessors in the series, this booklet is more than a mere list. The sources described cover both historical and current statistics, and the notes on the coverage of the material are extremely informative. A useful feature is the inclusion of warnings as to the limitations of the available figures and the errors that are liable to arise from incautious use of them, especially for purposes of historical comparison.]

MINISTRY OF FOOD. Domestic Food Consumption and Expenditure, 1951. Annual Report of the National Food Survey Committee. London: H.M. Stationery Office, 1954. 9½". Pp. 116. 3*s.* 6*d.*

[Reviewed in this issue.]

PREST (A. R.) and STEWART (I. G.). The National Income of Nigeria 1950–51. Colonial Research Studies, No. 11. London: H.M. Stationery Office, for the Colonial Office, 1954. 9½". Pp. iii + 124. 8*s.* 6*d.*

[To be reviewed.]

AUSTRALIAN

The Queensland Year Book 1952. Brisbane: Government Statistician's Office, 1953. 8½". Pp. 429. 5*s.*

[This issue of the *Yearbook* contains the usual wealth of statistical and descriptive information.]

CANADIAN

COMBINES INVESTIGATION COMMISSION, DEPARTMENT OF JUSTICE, OTTAWA. Electrical Wire and Cable Products. Report of H. Carl Goldenberg, Q.C., Special Commissioner, of an investigation into an alleged combine in the manufacture, distribution and sale of Electrical Wire and Cable Products. Ottawa: Department of Justice, 1953. 11". Pp. 246.

[Much of this report is taken up with verbatim quotations from evidence given in the course of the investigation. In his conclusions, the Special Commissioner finds that the nine companies which together account for practically the whole of the output of the industry have entered into agreements to fix prices and conditions of sale in such a way as unduly to prevent or lessen competition. The various arguments advanced in defence by the companies—that price uniformity was the result of the homogeneity of the product, or, alternatively, of price-leadership, rather than of collusion, that prices and profits were reasonable, etc.—are dismissed as either untenable or else irrelevant under the terms of the Combines Investigation Act.]

INTERNATIONAL

GILBERT (M.) and KRAVIS (I. B.). An International Comparison of National Products and the Purchasing Power of Currencies. A study of the United States, the United Kingdom, France, Germany and Italy. Paris: Organisation for European Economic Co-operation, 1954. 9½". Pp. 203.

[To be reviewed.]

UNITED NATIONS. Commodity Trade and Economic Development. Submitted by a Committee appointed by the Secretary-General. New York: United Nations Department of Economic Affairs, 1953. 9". Pp. v + 102. 5*s*.

[To be reviewed.]

UNITED NATIONS. Economic Survey of Europe in 1953, including a Study of Economic Development in Southern Europe. Prepared by the Research and Planning Division of the Economic Commission for Europe. Geneva: United Nations Department of Economic Affairs, 1954. 11". Pp. 314. 17*s*. 6*d*.

[To be reviewed.]

UNITED NATIONS. International Migration Statistics. Organisation and Operation, Recommended Standards, Sampling. New York: Statistical Office of the United Nations, 1953. 10½". Pp. 25. 1*s*. 9*d*.

[This contains discussion and recommendations relating to the collection and processing of migration statistics, together with information on the use of sampling for purposes of collection or tabulation.]

UNITED NATIONS. A Short International Bibliography of Public Administration. New York: United Nations Department of Public Information, 1953. 11". Pp. 20. 2*s*.

[This bibliography seeks to cover all aspects of the study of government as usually understood, together with certain topics somewhat outside that scope, such as education and the organisation of transport and public utilities. It is therefore inevitably highly selective, and its main usefulness will be as a starting-point to readers unfamiliar with the subject.]

UNITED NATIONS. A Study of Trade between Asia and Europe. Prepared by the Secretariats of the Economic Commission for Asia and the Far East, the Economic Commission for Europe and the Food and Agriculture Organization of the United Nations. Geneva: United Nations Department of Economic Affairs, 1953. 11". Pp. 146. 11*s*.

[This elaborate and important survey contains a detailed comparison of the structure of trade between Europe and Asia in recent years with the structure prevailing in the 1920s and 1930s, together with a discussion of future prospects. The volume of Europe's imports from Asia (excluding Japan) has fallen by about a quarter since before the war, chiefly on account of a decline in Asian production. The authors suggest that the "traditional" multilateral pattern of payments between Asia, the United Kingdom, and Continental Europe and the United States, as established in the 1920s, has now disappeared for good, and that new and different means of adjustment must be found. One promising possibility is thought to lie in a shift of European imports of raw materials from dollar sources to Asia.]

UNITED NATIONS ECONOMIC AND SOCIAL COUNCIL. Competition Between Steel and Aluminium. Geneva: United Nations Economic Commission for Europe, 1954. 11". Pp. 155. 9*s*.

[This is the first of a projected series of studies dealing with competition between steel and other materials. Part I of the study consists of a historical survey of world production and trade in aluminium. Since the beginning of the

century, world aluminium production has increased by about 10% per annum, a rate of growth similar to that of world steel production between 1880 and 1910. About half of total aluminium consumption is at present in direct competition with steel, but only a small part of world steel consumption is affected by competition from aluminium. The study analyses in detail competition between the metals in Europe in the five industries chiefly affected, railways, motor vehicles, shipbuilding, packaging and construction, and household equipment.]

UNITED NATIONS ECONOMIC AND SOCIAL COUNCIL. The European Steel Market in 1953. Geneva: United Nations Economic Commission for Europe, 1954. 11". Pp. 100. 5*s*.

[1953 was the first year since the war in which there was a general tendency for the supply of steel to exceed the demand. The consequent problems affected particularly the countries comprising the European Coal and Steel Community. Steel production in these countries fell or failed to rise in 1953, whereas production in the United States, Great Britain and the Soviet Union continued to expand. Notwithstanding this, internal prices in France as well as in Britain rose slightly during the year, and the fall in prices in Germany was not great. Export prices, however, fell sharply. The authors find that both transitory and longer-term causes contributed to bringing about these developments. It would in their view be most unfortunate if current reverses led to the conclusion that the industry should adjust itself permanently to a lower level of demand. Instead, they suggest various means by which the steel industry should participate more actively in efforts to maintain and stimulate demand for steel, both in existing uses and in new ones.]

UNITED NATIONS ECONOMIC AND SOCIAL COUNCIL. Some Important Developments During 1953 in Iron and Steel Technology. Geneva: United Nations Economic Commission for Europe, 1954. 11". Pp. 35. 1*s*. 9*d*.

[This paper is based on articles that have appeared in technical journals and on a number of special communications. It is divided into three parts, relating to pig-iron production, steel-making, and rolling and finishing processes. The use of oxygen in steel-making is thought to be perhaps the most important current line of advance, but some economic significance may also attach to the recent development of efficient small-capacity blast-furnaces, suitable for use in less advanced countries.]

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANISATION. World List of Social Science Periodicals. Paris: UNESCO, 1953. (Obtainable in U.K. from H.M. Stationery Office). 9½". Pp. 161. 9*s*. 6*d*.

[This useful new reference book contains information relating to some 700 current periodicals. The basic particulars on each journal (length and format, place and frequency of publication, names of editors, etc.) are supplemented by short but extremely informative notes on its scope. On brief inspection, the standard of accuracy appears to be very high. The only possible criticism is that the particulars given do not include prices.]

UNITED NATIONS FOOD AND AGRICULTURE ORGANIZATION. The World Food Problem. The mission of FAO. Rome: FAO, 1953. 8½". Pp. 21.

[The author provides an outline analysis of the prospects for increasing world production in pace with the probable rise of population. He enumerates the technical and economic obstacles to the expansion of food production, and then goes on to describe the contribution made by FAO towards overcoming these obstacles.]

UNITED NATIONS TECHNICAL ASSISTANCE ADMINISTRATION. Balance of Payments of Libya. Prepared for the Government of Libya by S. KIRKOR. New York: United Nations Department of Public Information, 1953. 10½". Pp. 25. 2*s*.

[This is designed as a supplement to the previous United Nations publication *A General Economic Appraisal of Libya*, which was noted in the ECONOMIC JOURNAL, June 1953, p. 523. It is based on statistics available in August 1951.]

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